STRATHAIRD
Bushel
LABEL TEA

Vickers-Armstrongs Ltd No 663 & 664

Profile, Panting Arrangement & Fd. Bottom Strengthening.

* No 663 - T.S.S. Strathnaver
Barrow Rpt No 21[illegible]

No 664 - T.S.S. Strathaird
Barrow Rpt No 2433

003659-003670-0003

21. 2. 30

…AL CONSTRUCTION WORKS
…D DEPT.
…KERS - ARMSTRONGS LTD.
12 FEB. 1930
BARROW-IN-FURNESS

T. S. S. Nº 663-4.

DIMENSIONS 630'-0" B.P. BEAM Mld. 80'-0". DEPTH Mld. 37'-6"
PROFILE INCLUDING PANTING ARRGT. STRENGTHENING …
DOUBLE BOTTOM FORD, TUNNEL & CASINGS & Bhds.

SCALE 1/8" = 1 FOOT

CLASS 100 A. WITH … [illegible]

NOTE :- SEE SEPARATE SUBMISSION FOR HATCHES, OIL BUNKERS, PILLARS & GIRDERS & SUPERSTRUCTURE.

A DECK
B DECK
C DECK
D DECK
E DECK
F DECK
G DECK
H DECK
BOILER ROOM
WATER BALLAST OR FRESH WATER
FRESH WATER
DUCT KEEL
W.T.B. 233.
PILLAR GIRDERS.
GIRDER UNDER
F.W. TANK
SOLID FLOORS
BEAMS 8 × 3 × 3 × .54/.44
BEAMS SPACED 33" APART
FOR BEAMS SEE SECTION AT Fr 44
FRAME BOTTOMS FOR SOLID FLOORS 4" × 4" × .54"
" " " PARTIAL " 7" × 3½" × .50" B.A.
REV. FRAMES " " SOLID " 4" × 4" × .54"
" " " PARTIAL " 7" × 3½" × .42 B.A.
FULL Ht GIRDER
½ Ht GIRDER
TANK SIDE CUTTING LINE
TANK TOP LINE
SKETCH SHEWING EXTENT OF ADDITIONAL GIRDERS
6" × 6" BAR
DOUBLE RIVETING
7/8" RIVETS
3/8
TANK TOP
~~4 × 4~~ TANK REV. FR.
6 × 6 × .54
in way of frame bracket
SKETCH SHEWING METHOD OF FITTING TANK SIDE BKts. TO ALLOW DOUBLE RIVETING.

Bulkhead limber plates as per Rule where it applies
Tween deck stiffeners are assumed to be spaced the same as the stiffeners in the hold below, except where marked otherwise.
Upper tween deck stiffeners are to overlap and be riveted to the boundary bar

PLAN No 18.

Plating to be sheathed in way of hatches ✓

21.2.30

003659-003670-0003

Vickers-Armstrongs Ld No 663/664

Amended Pumping Arrangement

No 663 - T.S.S. Strathnave
Barrow Rpt No 2414

No 664 - T. S. S. Strathaird
Barrow Rpt No 2433

8

003418-003420-0008

No 663&4

BILGE AND BALLAST ARRANGEMENT.

SCALE 1/8 IN = 1 FOOT.

NAVAL CONSTRUCTION WORKS
SHIPYARD DEPT.
VICKERS - ARMSTRONGS LTD.
9 APR 1930
BARROW-IN-FURNESS

LENGTH B.P 630'-0, BREADTH MLD. 80-0, DEPTH MLD TO "F" DECK 38'-0
LENGTH OF LONGEST COMPARTMENT 79'-9".

PUMP CAPACITIES

MAIN BILGE	255 TONS AT 60 FEET HEAD, 100 TONS AT 180 FEET HEAD, PER HOUR
BALLAST	" " " " " "
EMERGENCY BILGE	" " " " " "
OILY BILGE	20 " — — " — "
AUXILIARY BILGE	50 " 60 FEET "
REFRIGERATOR ROOM AUX BILGE	5 TONS

17/4/30

NOTES

ALL PIPING OF LAP WELDED MILD STEEL, GALVANISED, EXCEPTING THE OIL SUCTION PIPING INSIDE OIL FUEL TANKS WHICH IS TO BE LEFT BLACK.

BULKHEAD PIECES OF PLUMBER'S PIPE TO HAVE BULKHEAD FLANGE AND ONE PIPE FLANGE WELDED, THE OTHER FLANGE BEING SCREWED.

EXPANSION BENDS TO BE MADE WHERE NECESSARY.

WHERE POSSIBLE, SUCTIONS IN WELLS, TANKS AND COFFERDAMS TO BE KEPT UNDER ACCESS MANHOLES.

JOINTS OF OIL FUEL SUCTION PIPES TO BE MADE WITH BEST BROWN PAPER MILLBOARD STEEPED IN HOT SHELLAC. JOINTS OF WATER PIPES TO BE MADE WITH INSERTION.

ALL SOUNDING TUBES, EXCEPT THOSE TO TANKS AND WELLS, IN MACHINERY SPACES AND SHAFT TUNNEL, TO BE FITTED WITH HINGED ENGRAVED BRASS PLATES AT "F" DECK.

SOUNDING PIPES TO BE KEPT AS STRAIGHT AS POSSIBLE, BUT WHERE BENDS OCCUR THE SAME TO BE MADE EASY.

DOUBLING PLATES 1/2 THICK TO BE BEDDED IN CEMENT UNDER SOUNDING TUBES.

AIR PIPE BENDS THRO' SHELL OF CAST IRON, THOSE TO FRESH WATER TANKS TO HAVE CORK SPHERES FITTED IN THEM.

WATER TANK SUCTIONS AND BILGE SUCTIONS TO HAVE PERFORATED SHEET METAL [illegible] BOXES [illegible] SUCTIONS TO HAVE CAST IRON STRUMS.

[illegible] VALVE BODIES OF CAST IRON, THE VALVES, SEATS & SPINDLES, OF GUNMETAL FOR WATER SUCTIONS BUT OF STEEL FOR OIL SUCTIONS. ALL BILGE SUCTION VALVES OF S.D.N.R. PATTERN.

ALL PIPES IN CARGO HOLDS AND WHERE LIABLE TO DAMAGE TO BE CASED IN.

ALL BILGE VALVES, EXCEPTING ISOLATING VALVES AT BULKHEAD 107 TO BE OF S.D.N.R. TYPE.

MUD BOXES OF CAST IRON WITH GALVANISED STEEL STRAINERS TO OWNERS' PATTERN.

THE WHOLE SYSTEMS TO BE TESTED TO 30 LBS PER SQ INCH.

FOR VENTILATION OF DUCT KEEL SEE SEPARATE PLAN. {VENTILATION TO LLOYDS SURVEYOR'S SATISFACTION}

A SHORT LENGTH OF COPPER PIPE TO BE FITTED ON ALL SUCTIONS JOINING BILGE & BALLAST PUMPS.

THE SOUNDING ARRANGEMENTS FOR FRESH WATER CARRIED IN DEEP TANKS WILL BE SHOWN ON "FRESH WATER FILLING ARRANGEMENTS".

PIPE THICKNESSES

UNDER 3 1/2" BORE	=	3/16"
3 1/2" TO 5"	=	1/4"
ABOVE 5"	=	5/16"

LLOYDS NOTES.

THE SUCTION VALVES ON ALL OIL FUEL STORAGE, SETTLING AND DAILY SERVICE TANKS TO BE FITTED AND CONTROLLED AS PER SECTION 20E, CLAUSE 6(f) OF THE RULES (1929-30)

THE CAPACITY OF THE INDEPENDENT POWER DRIVEN PUMPS CONNECTED TO THE MAIN BILGE LINE TO BE AS PER SECTION 34, CLAUSE 7(f) OF THE RULES (1929-30)

THE FLASH POINT OF THE OIL FUEL TO BE ABOVE 150° FAH. AND THE REMAINING REQUIREMENTS OF SECTION 20 OF THE RULES (1929-30) TO BE COMPLIED WITH SO FAR AS THEY ARE APPLICABLE.

THE REMAINING REQUIREMENTS OF SECTION 34 OF THE RULES 1929-30 TO BE COMPLIED WITH.

MOTIVE POWER FOR OIL FUEL TRANSFER PUMPS TO BE CONTROLLED AS PER SECTION 20E, CLAUSE 7 OF THE RULES. (1929-30).

NON-RETURN VALVES ON BILGE SUCTIONS TO HAVE LLOYD'S APPROVAL.

SECTION AT 139-40
LOOKING AFT.
PORT SIDE SIMILAR
COFFERDAM 136 TO 139
OIL FUEL TANK 136 TO 139
2" SCUPPER
COFFERDAM 139 TO 140
3" SCUPPER
COFFERDAM 139 TO 156
OIL TANK 139 TO 156
"G" DK
"H" DK
"J" DK
AIR PIPE TOPS MARKED THUS ✓ ARE FITTED WITH CORK SPHERES.
THIS VALVE ONLY TO BE OPENED WHEN PUMPING UP PEAK, AND BEFORE OPENING, PRECAUTIONS TO BE TAKEN THAT ALL VALVES TO DOUBLE BOTTOM TANKS ARE PROPERLY CLOSED.
PEAK VALVE DECKPLATE (LOCKED)
SEMI-ROTARY PUMP
DISCH LED TO STORM VALVE
3 1/2" AIR PIPE P.
1 1/2" SOUND DRAIN HAT
"D" DECK
"E" DECK
"F" DECK
"G" DECK
RUDDER GLAND COMPT
2 1/2 SCUPPER
1 1/2 SOUND
AFT PEAK
No 6 HOLD
No 5 HOLD
No 4 HOLD
ENGINE ROOM
BOILER ROOM
PROVISIONS (INSULATED)
No 3 'TWEEN DECK HOLD (INSULATED)
No 3 HOLD (INSULATED)
No 2 'TWEEN DECK HOLD (INSULATED)
No 2 HOLD (INSULATED)
No 1 'TWEEN DECK HOLD
No 1 HOLD
AFTER PEAK TANK WATER BALLAST
FORE PEAK TANK WATER BALLAST
DUCT KEEL
FOR CORRECT POSITIONS OF PUMPS, PIPES, ETC., SEE ENGINE DEPTS ARRANGEMENTS.
FOR OIL FUEL AIR AND OVERFLOW PIPES SEE PLAN No 68. PNEUMERCATOR GAUGES TO BE FITTED TO ALL [illegible] WHICH IS BEING SUBMITTED SEPARATELY.
AND TESTED AFTER FITTING ON BOARD TO LLOYDS SATISFACTION
SOUNDING OF HOLDS ABOVE INSULATION TO BE MADE THRO' THERMOMETER TUBES
3 1/2 TANK AIR PIPE
3 1/2 COFFERDAM AIR PIPE P&S.
3 1/2 TANK AIR PIPE P&S. ✓
2 1/2" COFFERDAM AIR PIPE
2" D.B. COFFERDAM AIR PIPE
2 1/2 SOUND BILGE HAT
DRAIN HAT WITH BRINE DRAIN TRAP OVER.
2 1/2" BILGE SUCTN COFFERDAM P.
3 1/2" BILGE SUCTN FROM DRAIN HAT
3" F.W. SUCTION (WING) P.
2 1/2" BILGE SUCTION
OIL GUTTER
DRAIN HAT
1 1/2 SOUND F.W. TANK
MUD BOX
3 1/2 S.D.N.RV.
3 1/2 OVERBOARD DISCHARGE
8 BALLAST PUMP DIRECT SUCTION
20 DIA BILGE INJECTOR
3 1/2 S.D.N.R.V. ON BILGE SUCTION
1 1/2 SOUND UPPER COFFERDAM WITH AUTO-CLOSING COCK
1 1/2 SOUND BILGE WELL
No 7 D.B. TANK (PORT) BOILER FEED
No 8 D.B. TANK P&S BOILER FEED HARD WATER
No 11 DIESEL OIL TANK P.
No 10 OIL FUEL TANK P. D.B. TANK (PORT) OIL FUEL
No 9 OIL FUEL TANK P.
No 8 OIL FUEL TANK P. (PORT) OIL FUEL
No 2 OIL FUEL TANK P.
No 1 OIL FUEL TANK P.
BILGE WELL
PLAN No 67A

W.D.
J.R.B.
17/4/30

© 2020 Lloyd's Register Foundation
003418-003426-0007

Vickers-Armstrongs Ld. No 663/664

Plan of Superstructures

No 663 - T. S. S. Strathnaver
Barrow Rpt No 2414

No 664 - T. S. S. Strathaird
Barrow Rpt No 2433

Misc 148

1.

00 3418-003420-0003

27.6.30

28.6.30

T.S.S. Nº 663- 4
PLAN OF SUPERSTRUCTURES
SCALE 1/8" = 1FOOT

NAVAL CONSTRUCTION WORKS
SHIPYARD DEPT.
VICKERS - ARMSTRONGS LTD.
18 JUN. 1930
BARROW-IN-FURNESS

MACLACHLAN GRAVITY DAVITS
"A". DECK
STRONG BEAM AT FRS 109, 112 & 117 UNDER 'A' DK
MACLACHLAN GRAVITY DAVITS
26 STRINGER 48" WIDE D.R. BUTTS 3 × 3 × 36 STRINGER BAR
No PLATING
Deck .26 S.R. Butts & seams
SPIRAL STAIR PORT ONLY
CONNECTION OF STRONG BEAM TO DA AT FRS 109 & 112. CONNECTION AT FR 117 SIMILAR EXCEPT WHERE STATED OTHERWISE.
PLAN AT 'A' DK
ELEVATION IN WAY OF SWIMMING BATH LOOKING OUTBOARD
SHIP'S SIDE WEBS. ARRANGED TO SUIT ACCOMMODATION.
Nº5 HATCH
"B". DECK
"C". DECK
ELEVATION
'A' & 'B' DK SUPPORTS CLEAR OF DAVITS.
CONNECTION OF FRAMES AT 'C' DECK FRS 139 - 165
BEAM KNEE AT 'A' & 'B' DKS FRS 138 - 165
SECTION AT FR 148
SCALE 1/4" = 1FOOT.
OFFICERS ACCOMMN
ELEVATION 24'-0" FROM C LINE
PART PLAN OF NAVIGATING BRIDGE SHOWING STIFFENING UNDER FUNNEL
BRIDGE FRONT 'D'-'E' DKS
ELEVATION 9'-0" FROM C LINE
LOUNGE
LADIES LAVATORY
MAC-LACHLAN DAVITS
SECTION AT FR 202 SHOWING DAVIT LOOKING FORWARD
PLAN VIEW AT 'A' DK IN WAY OF DAVITS
SECTION AT FR 139
SECTION AT FR 162
WINDOWS IN PUBLIC ROOMS
'F' DK
'G' DK
FRAMES SPACED 24"

PLAN Nº 102

Vickers-Armstrongs Ld. No 663 & 664

"F", "G" & "H" Decks.

No 663 - T.S.S. Strathnaver
Barrow J. E. Rpt No 2414

No 664 - T.S.S. Strathaird
Barrow J. E. Rpt No 2433

003659-003670-0002

10.2.30

No. 663-4.

NOTE -
PLATING OF ALL DECKS ARRANGED FOR MULTIPLE PUNCHING.
HATCH END BEAMS SAME SIZE AS ORDINARY BEAMS IN THE VICINITY.
SEE SEPARATE SUBMISSION FOR PILLARS & GIRDERS.

DIMENSIONS 630'-0" B.P. × 80'-0" × 46'-6" MLD. TO "E" DK.

CLASS 100A WITH FREE BOARD.

DECK PLANS. SHEET No. 2.

SCALE :- 1/16" = 1 FOOT.

SHIPYARD DEPT.
VICKERS - ARMSTRONGS L
3 FEB. 1930
BARROW-IN-

SHELL CHOCKS 4"×4"×·55 TO ·40" AT ENDS.
STRINGER ANGLE 3½"×2½"×·44" IN WAY OF "C" DECK.
" " 3½"×2½"×·48" " "D" "
" " 3½"×2½"×·50"-·40" " "E" "
END OF "D" DK.
END OF "C" DK.
1/3 BEAM.
"F" DK. BEAMS. 8"×3" ×3" ×·34/·44" CHANS. IN WAY OF 33" SPACING.
" " 8"×3" ×·44" B.A. " " " 27" "
" " 8"×3" ×·36" B.A. " " " 24" "
4 ROWS OF PILLARS SEE MIDSHIP SECTION.
16'-0" span
Bulkheads - see freeboard assignment letter of 3.1.30
"F" DECK.
STRINGER 57½"×·44" BUTTS T.R. SEAMS S.R.
PLATING IN WAY OF "C" DK. ·40" BUTTS D.R. SEAMS S.R.
EXCEPT WHERE STATED OTHERWISE
LINE OF PILLAR GIRDER UNDER
DECK HOUSE
GIRDER UNDER
BHD UNDER
CARGO HATCH
ENGINE HATCH
BOILER HATCH
PILLAR GIRDER UNDER
STORES LIFT
LIFT
TRUNKED CARGO HATCH
STRINGER 45"×·40"
W.T.B. UNDER
25" FRAME SPACING
33" FRAME SPACING
3/5 LENGTH.
1/2 LENGTH.
27" FRAME SPACING
LAVATORIES.
3RD CLASS PROMENADE.
3RD CLASS SALOON.
GALLEYS.
1ST CLASS SALOON.
PASSENGERS.
CREW.
STORES.
"G" DK. BEAMS 8"×3" ×3" ×·34/·44" CHANS. IN WAY OF 33" SPACING.
" " 8"×3" ×·44" B.A. " " " 27" "
" " 8"×3" ×·36" B.A. " " " 24" "
4 ROWS OF PILLARS SEE MIDSHIP SECTION.
16'-0" span
SHELL CHOCKS 4"×4"×·55" TO ·40" AT ENDS.
STRINGER ANGLE 3½"×2½"×·34" IN WAY OF "C" DK.
" " 3½"×2½"×·44"-·40" " "D" "
" " 3½"×2½"×·48"-·40" " "E" "
"G" DECK.
STRINGER 57½" BUTTS T.R. SEAMS S.R.
Butts double riveted
See pillaring in Boiler Rooms
FAN ROOM
W.T.B. OVER & UNDER
3RD CLASS PASSENGERS (PERMANENT).
THIS MAY BE A W.T. FLAT.
CREW.
3RD CLASS PASSENGERS OR CARGO.
MAIL ROOM.
CHAIN LOCKER
STORE
STRINGER PLATE 57½"×·34"
CONTINUOUS STRINGER ANGLE.
SHELL CHOCKS 4"×3"×·34"
BEAMS 8"×3"×3"×·34/·44" CHANS.
4 ROWS OF PILLARS. SEE MIDSHIP SECTION.
16'-0" span
OIL BUNKER BHDS. TO FORM PILLAR GIRDER UNDER "G" DECK.
8'-0" PARALLEL TO "G" DK.
9'-6" PARALLEL TO "G" DK.
BEAMS 8"×3"×3"×·40/·44" IN WAY OF 33" FR. SPACING.
" 8"×3"×·44" B.A. " " 27" "
16'-0" span
"H" DECK.
W.T. FLAT.
DK. PLATING ·30" BUTTS S.R. SEAMS S.R.
ENGINE ROOM.
BOILER ROOM.
24" FRAME SPACING
STEERING GEAR COMPT.
3RD CLASS PASSENGERS OR CARGO.
MAILS.
SEPARATE SUBMISSION FOR PILLARS & GIRDERS IN ENGINE & BOILER ROOM.
PROVISIONS.
INSULATED CARGO.
FORE PEAK
THIS MAY BE A W.T. FLAT.

PLAN No. 5.

8.2.30

003659-003670-0002

Vickers-Armstrongs Ld Nos 663 & 664

Equipment Particulars

No 663 - T.S.S. Strathnaver

Barrow F. E. Rpt No 2414

No 664 - T.S.S. Strathaird

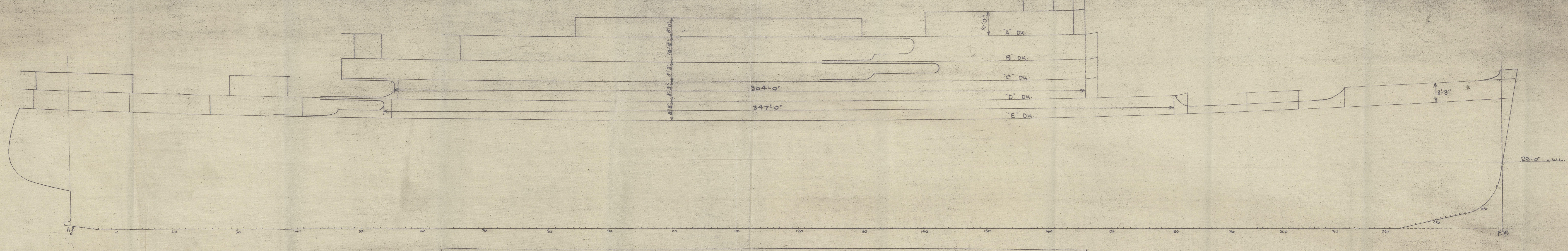
Barrow F. E. Rpt No 2433

14

003418-003420-0009

11-2-30

PROFILE.



"A" DK.
"B" DK.
"C" DK.
"D" DK.
"E" DK.
10'0"
8'0"
10'6"
8'3"
8'3"
8'3"
304'-0"
347'-0"
8'3"
29'-0" L.W.L.
A.P.
F.P.
10
20
30
40

NAVAL CONSTRUCTION WORKS
SHIPYARD DEPT.
VICKERS - ARMSTRONGS LTD.
4 FEB. 1930
BARROW-IN-FURNESS

Nos 663 & 664.

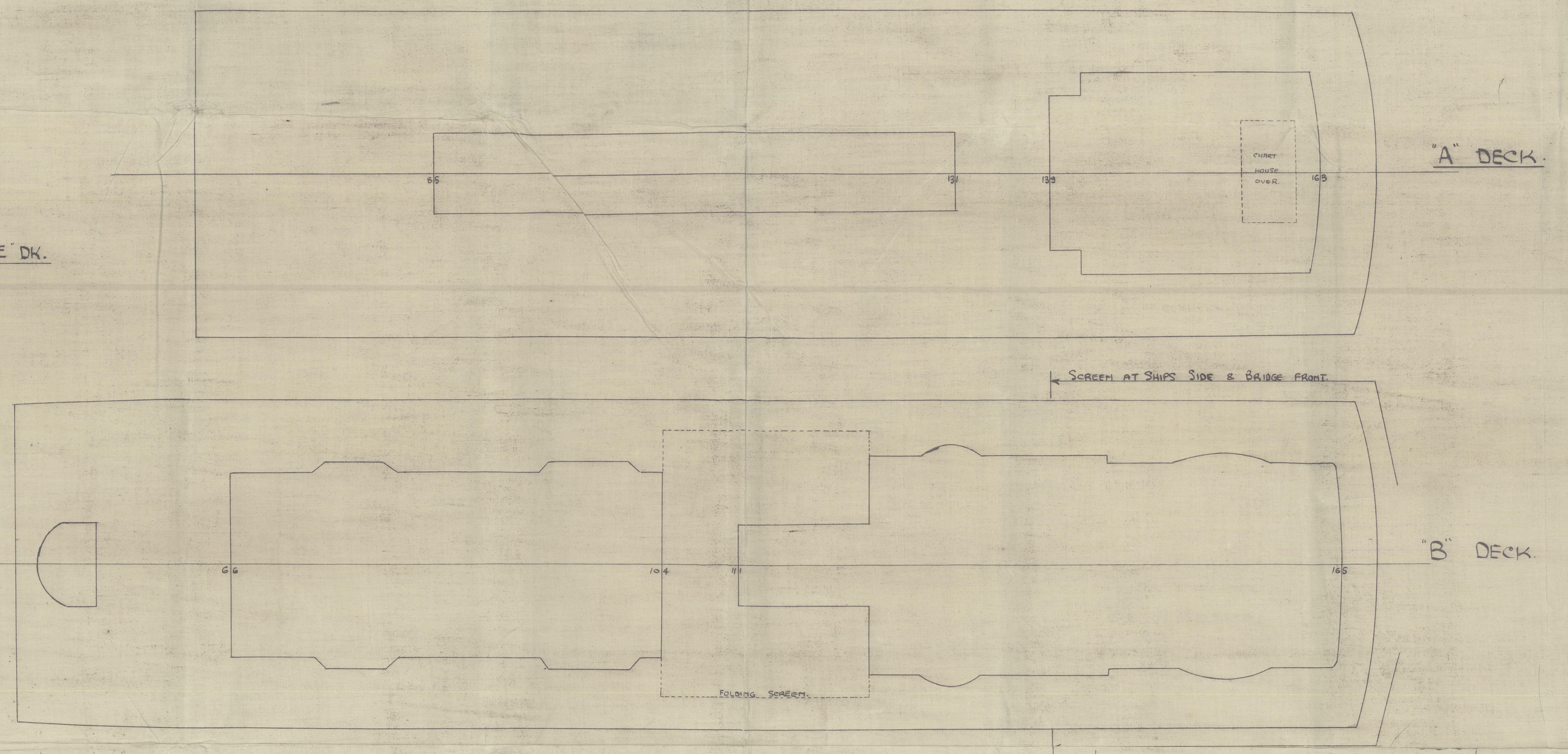
EQUIPMENT.

(SCALE :- 1/16 IN. = 1 FT.)

DIMENSIONS :- 630'-0" B.P. × 80'-0" MLD × 46'-6" TO "E" DK.

"D" FOR SCANTLINGS = 44.00

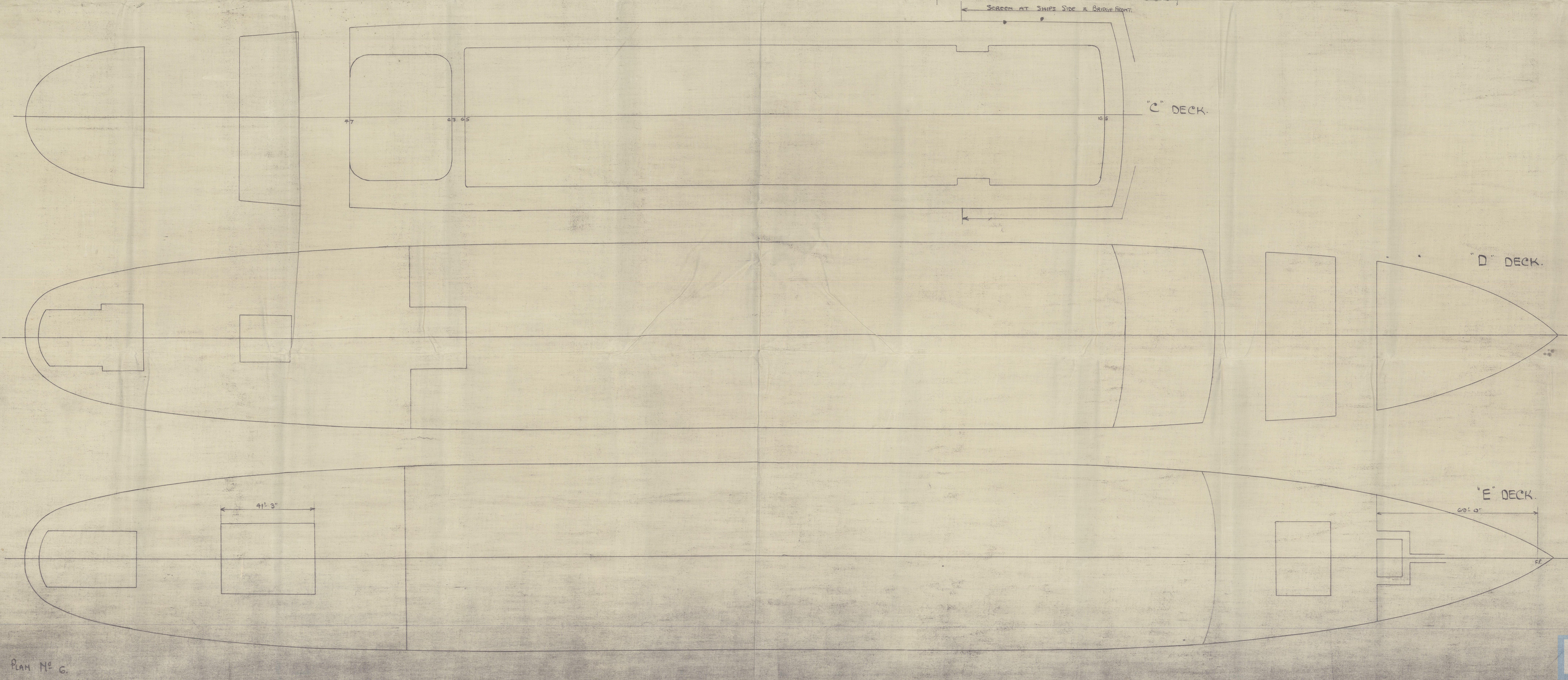
SECOND NUMERAL		L (B + D) ~~×37.5~~ = 74025 + 630 × 9 × .75 = 4252 }		7827 ~~7812~~
"E" DK.	FRS. 212 TO F.P.	(69 × 8.25 × .75)	=	427
"E" DK.	6" AFT OF 54 FR. TO 180 FR	(347 × 8.25 × .75)	=	214
"E" DK.	FRS. 26 TO 41	(41.25 × 8.25 × .75)	=	25
"D" DK.	1'-6" AFT OF 56 FR TO 166 FR.	(304 × 8.25 × .75)	=	188
"C" DK.	FRS. 65 – 165	(275 × 8.25 × .5)	=	113
"C" DK	FRS 47 – 63	(44 × 8.25 × .5)	=	18
"B" DK.	FRS 111 – 165	(148.5 × 10.5 × .5)	=	78
"B" DK.	FRS 66 – 104	(104.5 × 10.5 × .5)	=	54
"A" DK.	FRS. 85 – 131	(126.5 × 8 × .5)	=	50
"A" DK.	FRS. 139 – 163	(66 × 10 × .5)	=	33
		EQUIPMENT No		~~863~~ 8246



"A" DECK.
65
131
139
163
FUNNEL
"B" DECK.
SCREEN AT SHIPS SIDE & BRIDGE FRONT.
66
104
111
165
FOLDING SCREEN

EQUIPMENT p. +

2 BOWER ANCHORS STOCKLESS	EACH	137 CWTS	=	274 CWTS	} 390 CWTS.	
1 " ANCHOR	"	116 "	=	116 "		
1 STREAM ANCHOR	"	53 1/8 "				
330 FATHS. OF 3 1/4" STUD CHAIN CABLE.						
STREAM WIRE		150 FATHS.	OF 7" STEEL WIRE.			6 1/2" Rule SFSW
TOWLINE		140 "	OF 7 1/2" " "			7" Rule, SFSW.
HAWSERS	3 AT	120 FATHS.	8" HEMP OR 2 3/4" S.W.R.			
WARPS.	3 AT	120 "	8" " OR 2 3/4" S.W.R.			



SCREEN AT SHIPS SIDE & BRIDGE FRONT.
"C" DECK.
47
63
65
165
"D" DECK.
"E" DECK.
41'-3"
69'-0"
F.P.

11-2-30

PLAN No 6.

S.S. "Strathaird"

Vickers. Armstrongs. Ltd No. 664

Midships Section
as built

Barrow Report 2433

P151

003659-003670-0001

© 2020
Lloyd's Register
Foundation

NAVAL CONSTRUCTION WORKS
SHIPYARD DEPT.
VICKERS-ARMSTRONGS LTD.
15 JAN 1932
BARROW-IN-FURNESS

T. S. S. "STRATHAIRD".

MIDSHIP SECTION.

SCALE:- ½ INCH = ONE FOOT

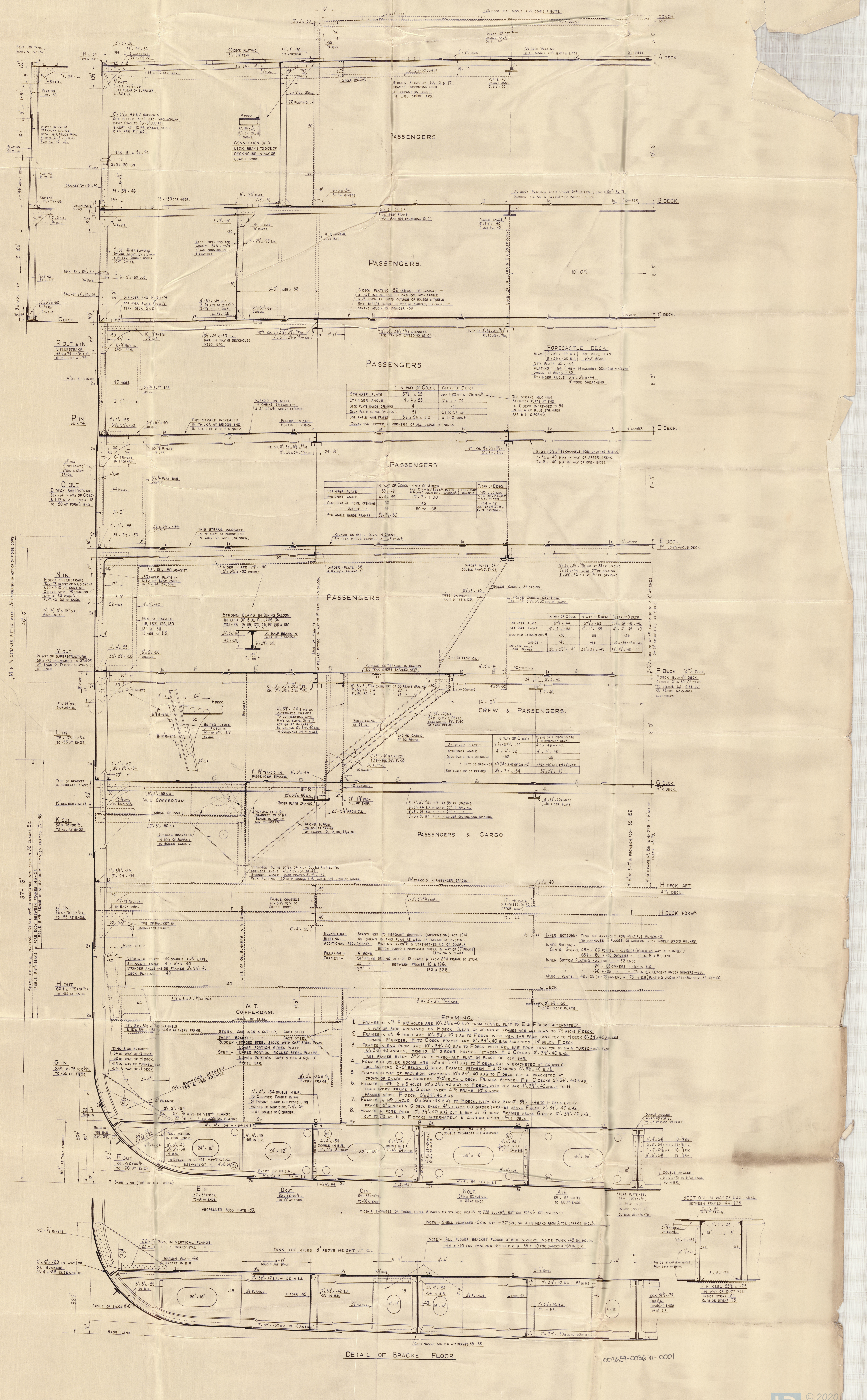
TO CLASS ✝ 100 A.1. WITH FREEBOARD
ALL CHANNELS & BULB ANGLES TO NEW BRITISH STANDARD.

EQUIPMENT Nº 86469.

2 BOWER ANCHORS STOCKLESS 142 CWTS. EACH.
1 " " " 120 "
1 STREAM " " 55¼ "
CABLE 330 FMS. 3 5/16 STUD LINK CHAIN
STREAM ANCHOR WIRE 150 FMS. 6½" F.S.W.R.
TOWLINE 150 FMS. 8" F.S.W.R.
HAWSERS & WARPS. 2 AT 100 FMS. 4½" F.S.W.R.
" " " 2 " 100 " 4" "
" " " 2 " 60 " 3½" "
" " " 2 " 100 " 3½" "

LENGTH B.P.	L =	630'-0"	
BREADTH MOULDED	B =	80'-0"	
DEPTH MOULDED TO F DECK	=	37'-6"	
DEPTH FOR SCANTLINGS.	D =	44'-0"	
(L × D)	=	27720	
L (B + D)	=	78120	
L ÷ D TO C DECK	=	10·00	
" " D DECK	=	11·51	
" " E DECK	=	13·55	
d TO G DECK	=	24'·97	
d TO H DECK FORWARD	=	15'·47	FRS. 139 – 156 = 16·87
d TO H DECK AFT	=	17'·47	
d TO FLAT IN ENGINE ROOM	=	16·60	
DRAUGHT MLD.	=	29'-0"	

ALL DECKS, INNER BOTTOM, & A.B.C & D STRAKES OF OUTER BOTTOM ARRANGED FOR MULTIPLE PUNCHING
HYDRAULIC RIVETING IN FLAT PLATE KEEL & VERTICAL C.R. KEELSON
SHEERSTRAKES HAND RIVETED


A DECK
B DECK
C DECK
D DECK
E DECK
1ST CONTINUOUS DECK
F DECK 2ND DECK
G DECK 3RD DECK
H DECK AFT
4TH DECK
H DECK FORWD.
J DECK
PASSENGERS
PASSENGERS.
CREW & PASSENGERS.
PASSENGERS & CARGO.
W.T. COFFERDAM.
FORECASTLE DECK.
R OUT & IN
P IN
O OUT
N IN
M OUT
L IN
K OUT
J IN
H OUT
G IN
F OUT
E IN
D OUT
C IN
B OUT
A IN
FLAT PLATE KEEL
BASE LINE (TOP OF FLAT KEEL)
PROPELLER BOSS PLATE ·90.
OIL BUNKERS BETWEEN 139 & 156 FRAMES.
STRONG BEAMS IN DINING SALOON. IN LIEU OF SIDE PILLARS ON FRAMES 115, 119, 122, 126, 134, 138 & 130.
X. HALF BEAMS IN WAY OF B CASING.
LINE OF PILLARS. NO PILLARS FITTED IN WAY OF 1ST CLASS DINING SALOON.
BOILER CASING. ·28 CASING.
ENGINE CASING ·28 CASING. STIFFRS. 3½" × 3" × 30 EVERY FRAME.
KORKOID ON STEEL DECK IN CABINS 2½ TEAK WHERE EXPOSED AFT & 3" FORWD.
DOUBLINGS FITTED AT CORNERS OF ALL LARGE OPENINGS.
SECTION IN WAY OF DUCT KEEL
DETAIL OF BRACKET FLOOR
TANK TOP RISES 3" ABOVE HEIGHT AT C.L.
MIDSHIP THICKNESS OF THESE THREE STRAKES MAINTAINED FORWD. TO 228 BULKHD. BOTTOM FORWD. STRENGTHENED.

C DECK:

	IN WAY OF C DECK	CLEAR OF C DECK
STRINGER PLATE	57½ × 55	56 × 1·20 AFT & 1·25 FORWD.
STRINGER ANGLE	4 × 4 × 55	7 × 7 × 74
DECK PLATE INSIDE OPENINGS	·41	·41
DECK PLATE OUTSIDE OPENINGS	·51	·51 TO ·94 AFT.
STR. ANGLE INSIDE FRAMES	3½ × 2½ × ·50	& 1·12 FORWD.

DOUBLINGS FITTED AT CORNERS OF ALL LARGE OPENINGS.

D DECK:

	IN WAY OF C DECK	IN WAY OF D DECK.	CLEAR OF D DECK.
STRINGER PLATE	59 × ·48	67 × 1·22 & 84 DOUB + 78 × ·92 FORWD. ADJACENT. 83 × 1·18 & 70 DOUBG. + 86 × ·86 AFT ADJACENT	1·00 TO ·50 ENDS
STRINGER ANGLE	4" × 4 × ·55	7 × 7 × 1·00	7 × 7 × 1·00 & 6" × 6 × 90-70 TO 5 × 5 × 40 ENDS.
DECK PLATING INSIDE OPENINGS	·36	46	·44 – 40
" " OUTSIDE "	·44	·80 TO ·68	·80 – ·40 AFT & ·86 & 80 TO ·40 FORWD.
STR. ANGLE INSIDE FRAMES	3½ × 2½ × 50		

E DECK:

	IN WAY OF C DECK.	IN WAY OF D DECK.	CLEAR OF D DECK
STRINGER PLATE.	57½ × ·44	57½' × ·52	57½ × ·54 – ·45 × ·40
STRINGER ANGLE.	4" × 4" × ·55	4" × 4" × ·55	4' × 4' × ·48 – ·40
DECK PLATING INSIDE OPENGS.	·36	·36	·36
" " OUTSIDE "	·40	·46	·50 & ·46 – 36 AT ENDS
STRINGER ANGLE INSIDE FRAMES.	3½" × 2½" × ·44	3½" × 3½' × ·48	3½" × 2½" × ·48 – ·40

F DECK:

	IN WAY OF C DECK	CLEAR OF D DECK WHERE E IS STRENGTH DECK.
STRINGER PLATE	71¾ – 57½" × ·44	45" × ·46 – ·40.
STRINGER ANGLE.	4" × 4' × 52	4' × 4" × 48
DECK PLATE INSIDE OPENINGS.	·36	·36
" " OUTSIDE OPENINGS	·40 (·38 CLEAR OF CASING)	·42 – ·40 AFT & ·42 FORWD.
STR. ANGLE INSIDE FRAMES.	3½" × 2½" × ·34.	3½" × 2½" × ·48

BULKHEADS:- SCANTLINGS TO MERCHANT SHIPPING (CONVENTION) ACT 1914.
RIVETING:- AS SHEWN ON THIS PLAN AS WELL AS SCHEME OF RIVETING.
ADDITIONAL REQUIRMENTS:- PANTING ARRGTS. & STRENGTHENING OF DOUBLE BOTTOM FORWD. & INCREASED SHELL IN WAY OF 27" FRAME [SPACING & PEAKS]
PILLARING:- 4 ROWS.
FRAMES:- 24" FRAME SPACING AFT OF 12 FRAME & FROM 228 FRAME TO STEM.
33" " " BETWEEN FRAMES 12 & 186.
27" " " " " 186 & 228.

INNER BOTTOM:- TANK TOP ARRANGED FOR MULTIPLE PUNCHING. NO MANHOLES IN FLOORS OR GIRDERS UNDER WIDELY SPACED PILLARS
INNER BOTTOM:-
CENTRE STRAKE 65½ × ·66 FOR ½L – ·58 ENDS (WIDER IN WAY OF TUNNEL)
65½ × ·66 + ·05 OWNERS = ·71 IN E & B SPACE.
INNER BOTTOM PLATING ·55 FOR ½L – 52 ENDS.
" " " ·64 + ·05 OWNERS = ·69 IN E.R.
" " " ·66 + ·05 " = ·71 IN B.R. (EXCEPT UNDER BUNKERS – ·66.
MARGIN PLATE.- 48 × ·68 (+ ·05 OWNERS = ·73 IN E.R.) PLATING UNDER Nº 1 CARGO HATCH ·52 + ·08 = ·60

FRAMING.

1. FRAMES IN NOS. 5 & 6 HOLDS ARE 10" × 3½" × 40 B.A's. FROM TUNNEL FLAT TO E & F DECKS ALTERNATELY. IN WAY OF SIDE OPENINGS ON F DECK. CLEAR OF OPENINGS FRAMES ARE CUT DOWN TO 7½ ABOVE F DECK.
2. FRAMES IN Nº 4 HOLD ARE 10" × 3½" × 40 B.A's TO F DECK WITH REV. BAR FROM TANK TOP TO H DECK 6" × 3½" × 40 ANGLES FORMING 12" GIRDER. F TO C DECK FRAMES ARE 6" × 3½" × 40 B.A's SCARPHED 18" BELOW F DECK.
3. FRAMES IN ENG. ROOM ARE 10" × 3½" × 40 B.A's TO F DECK WITH REV. BAR FROM TANK TOP TO MAIN TURBO-ALT. FLAT. 6" × 3½" 40 ANGLES, FORMING 12" GIRDER. FRAMES BETWEEN F & C DECKS 6" × 3½" × 40 B.A's. WEB FRAMES EVERY 3RD FR. TO TURBO-ALT. FLAT IN PLACE OF REV. BAR.
4. FRAMES IN BOILER ROOMS ARE 10" × 3½" × 40 B.A's. TO F DECK, CUT & BRACKETED AT CROWN OF OIL BUNKERS 2'-6" BELOW G DECK. FRAMES BETWEEN F & C DECKS 6" × 3½" × 40 B.A's
5. FRAMES IN WAY OF PROVISION CHAMBERS 10" × 3½" × 40 B.A's TO F DECK CUT & BRACKETED AT CROWN OF DWARF OIL BUNKERS 2'-6" BELOW J DECK. FRAMES BETWEEN F & C DECKS 6" × 3½" × 40 B.A's
6. FRAMES IN NOS. 2 & 3 HOLDS 10" × 3½" × 40 B.A's TO F DECK, WITH REV. BAR 4" × 3½" × 40 ANGLE TO H DECK EVERY FRAME & G DECK EVERY 4TH FRAME, 10" GIRDER. FRAMES ABOVE F DECK 6" × 3½" × 40 B.A's.
7. FRAMES IN Nº 1 HOLD 10" × 3½" × ·48 B.A's. TO F DECK, WITH REV. BAR 6" × 3½" × ·48 TO H DECK EVERY FRAME (12" GIRDER) & G DECK EVERY 4TH FRAME (10" GIRDER.) FRAMES ABOVE F DECK 6" × 3½" × 40 B.A's.
8. FRAMES IN FORE PEAK 10" × 3½" × 40 B.A's CUT & BKD. AT G DECK. FRAMES ABOVE G DECK 10" × 3½" × 40 B.A's. CUT TO 7½ AT E & F DECKS ALTERNATELY & CARRIED UP TO F'CLE DECK.

NOTE:- SHELL INCREASED ·02 IN WAY OF 27" SPACING & IN PEAKS FROM A TO L STRAKE INCLE.

NOTE:- ALL FLOORS, BRACKET FLOORS & SIDE GIRDERS INSIDE TANK ·49 IN HOLDS ·49 + ·10 FOR OWNERS = ·59 IN E.R. & ·55 + ·10 FOR OWNERS = ·65 IN B.R.

003659-003670-0001

Vickers - Armstrongs Ld No 663 & 664

Topside Plating

No 663 - T.S.S. Strathnaver
Barrow F. E. Rpt No 2414

No 664 - T.S.S. Strathaird
Barrow F. E. Rpt No 2433

76

003418-003420-0001

Nos 663 AND 4 7/3/30.

EXPANSION OF TOPSIDE PLATING.

SCALE :- 1/8 INCH = 1 FOOT

NAVAL CONSTRUCTION WORKS
SHIPYARD DEPT
VICKERS-ARMSTRONGS LTD.
28 FEB. 1930
BARROW-IN-FURNESS

DETAIL OF OPENINGS IN SHELL
FRAMES 19-49
SCALE 1/2 INCH - 1 FOOT

FOR FRAMING OF "A" & "B" DECK SHELTERS, "A", "B", C & D DECK SUPPORTS SEE PLAN OF SUPERSTRUCTURES to be submitted

E DECK
5 × 3½ × ·50 LUG
LUGS
7 × 3½ × 50
OPENING 3'-0½" MINIMUM
12 RAD
TEAKWOOD RAIL 9 × 2½"
"A" DECK
"B" DECK
"C" DECK
"D" DECK
"E" DECK
"F" DECK
STRINGER ANGLE 3 × 3 × ·36
STRINGER ANGLE 3½ × 3½ × ·46
WINDOW
DOOR P&S
GANGWAY DOOR
SHELL CHOCKS 4 × 4 × ·55
·56 DOUBLING
33" SPACING
27" SPACING
LENGTH

To be commenced with Superstructures

Butts rearranged as practicable

Double Strap.

·74 continuous Bulwark fitted

may be bulwark thickness lapped

may be ·90

plate stay

Tapered to ·57.

See letter

See amended plan approved 2/7/30

PLAN Nº 27

7.3.30

003418-003420-0001

Vickers-Armstrongs Ld No 663/4

Arrangement of Insulated Cargo Spaces

Sheet 2.

No 663 – T.S.S. Strathnaver
Barrow F. E. Rpt No 2416

No 664 – T.S.S. Strathaird
Barrow F. E. Rpt No 2434

003418-003420-0005

N°s 663 AND 4

ARRANGEMENT OF INSULATED CARGO SPACES AND PROVISION CHAMBERS.

SCALE :- 1/4 INCH = 1 FOOT

SHEET 2 - PLAN VIEWS

NOTES.
BRINE GRID SUPPORTS IN PROVISION ROOMS TO BE OF GALVANISED IRON - NO WOOD.

SEE SEPARATE PLAN FOR DETAIL OF PROVISION ROOMS.
" " " " " " BRINE ROOM
ALL STEEL WORK IN HOLDS & TWEEN DECKS EXCEPT TANK TOP TO BE WELL COATED WITH VICKERS BITUMINOUS SOLUTION.
TANK TOP TO BE COATED WITH WAILES DOVES BITUMASTIC.
POSITION OF THERMOMETER TUBES WILL BE GIVEN LATER.

ALL PIPES IN INSULATED SPACES TO BE KEPT AS HARD IN TO SHELL AND BULKHEADS AS POSSIBLE TO AVOID BOXING OUT.

PLAN VIEW AT HOLD
SEE SEPARATE PLAN FOR POSITIONS OF EYEPLATES IN HOLDS
VENT PORT ONLY.
OIL BUNKER BULKHEAD
C.O2 FLASK STOWAGE
REFRIGERATING MACHINERY ROOM
BRINE TANK ROOM AND EVAPORATORS
BHD PORTABLE FOR UNSHIPPING CONDENSERS
CALCIUM STORE
ENTRANCE
INSULATION TO BE SPECIALLY ARRANGED IN WAY OF BRINE FEED AND RETURN PIPES
No 3 HOLD (INSULATED)
EXTENT OF ELM CEILING UNDER HATCHES - 2" THICK
INSPECTION PLUGS TO BE ARRANGED IN TANK TOP INSULATION
INSULATION MADE SUITABLE ON OUTBOARD SIDE OF PILLARS FOR INSPECTION PURPOSES.
No 2 HOLD (INSULATED)
18" DRAIN HAT
PLAN VIEW AT "J" DECK
FLOOR OF PROVISION ROOMS TO HAVE 2" CEMENT FINISH (ROCK ASPHALT) WITH PORTABLE TEAK GRATINGS ON TOP.
LINE OF "H" DECK, OVER
ICE STORE
STORES LIFT
POULTRY ROOM
FISH ROOM
ICE CREAM ROOM
HANDING ROOM
ENTRANCE
No 2 MEAT ROOM
No 1 MEAT ROOM
COOL ROOM
FRUIT AND VEGETABLE ROOM
SPACE FOR SEWAGE PUMP
PLAN VIEW AT "H" DECK
LINE OF "G" DECK, OVER
BULK STORE
No 3 MEAT ROOM
No 4 MEAT ROOM
POTATOES NO BRINE GRIDS
BONDED STORE NO BRINE GRIDS
BEER STORE NO BRINE GRIDS
No. 3 TWEEN DECK 2 1/2 OREGON PINE ON DECK
No 3 CARGO HATCH (INSULATED)
SPECIAL CARGO ROOM 2 1/2 OREGON PINE ON DECK
No 2 LOWER TWEEN DECK (INSULATED)
No 2 CARGO HATCH (INSULATED)
VENT STARBD ONLY
FOR FAN ROOMS SUPPLYING SPECIAL CARGO ROOMS SEE PLAN No. 246.
PLAN VIEW OF FAN ROOMS
KEY PLAN OF HATCHES
SCALE :- 1/4 INCH = 1 FOOT
No 2 HATCH "H" DECK
No 3 HATCH "H" DECK
No 3 HATCH "G" DECK
23'-11 1/2 FROM ℄
3 1/2 x 3 1/2 x ·50 LUGS.
3" FLANGE.
7/8 RIVS.

Draining arrangements to be in accordance with Section 10 of the Rules.
The remaining requirements of the Rules for Refrigerating Machinery and Appliances to be complied with.
BH.
12-10-30.

PLAN No 134.

Vickers-Armstrongs Ld No663/4

Arrangement of Insulated Cargo Spaces

Sheet 1.

No 663 - T.S.S. Strathnaver
Barrow J. E. Rpt No 2416

No 664 - T.S.S Strathaird
Barrow J. E. Rpt No 2434

003418-003420-0010

14/10/30

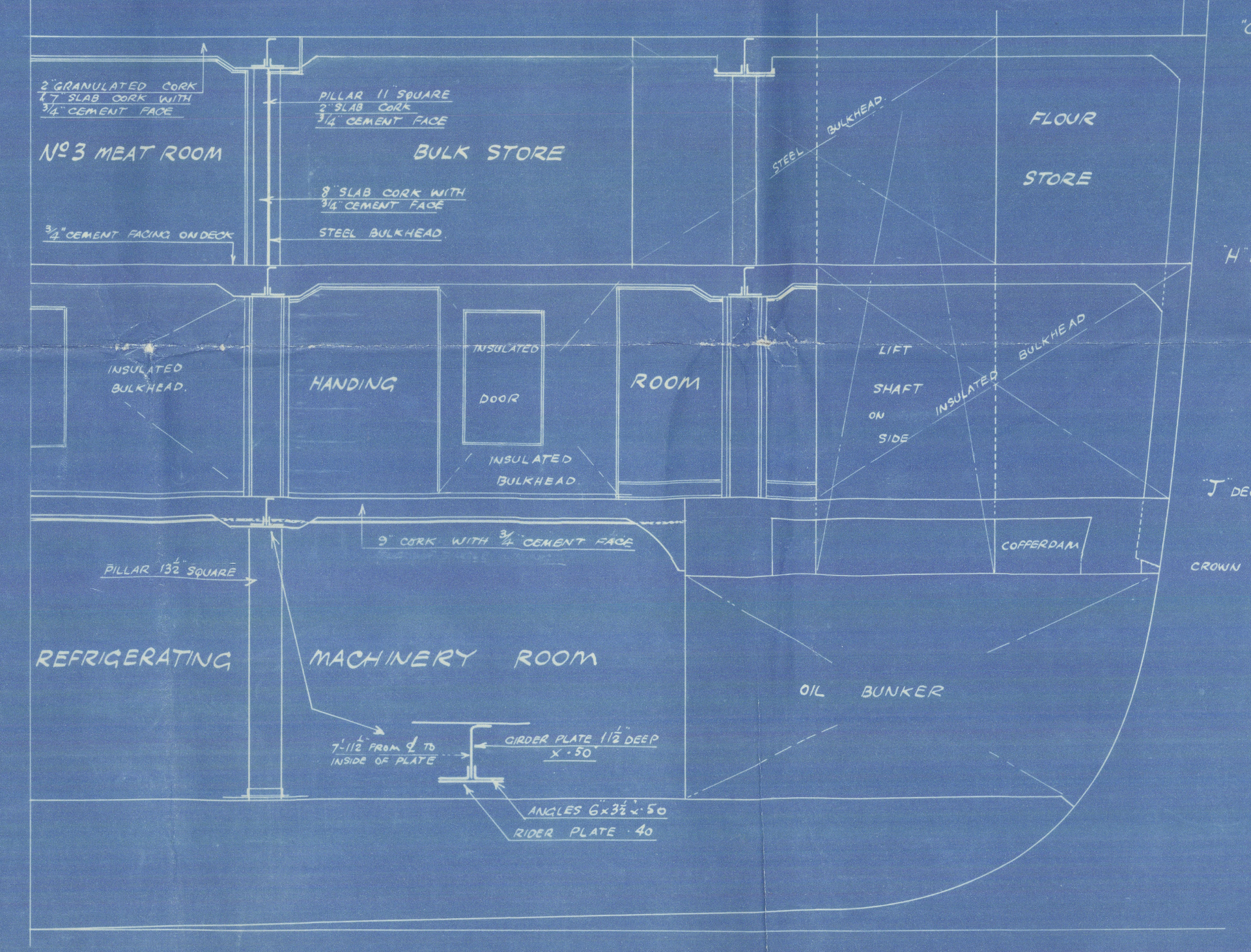
Nos 663 AND 4

ARRANGEMENT OF INSULATED CARGO SPACES AND PROVISION CHAMBERS

SCALE :- 1/4 INCH = 1 FOOT

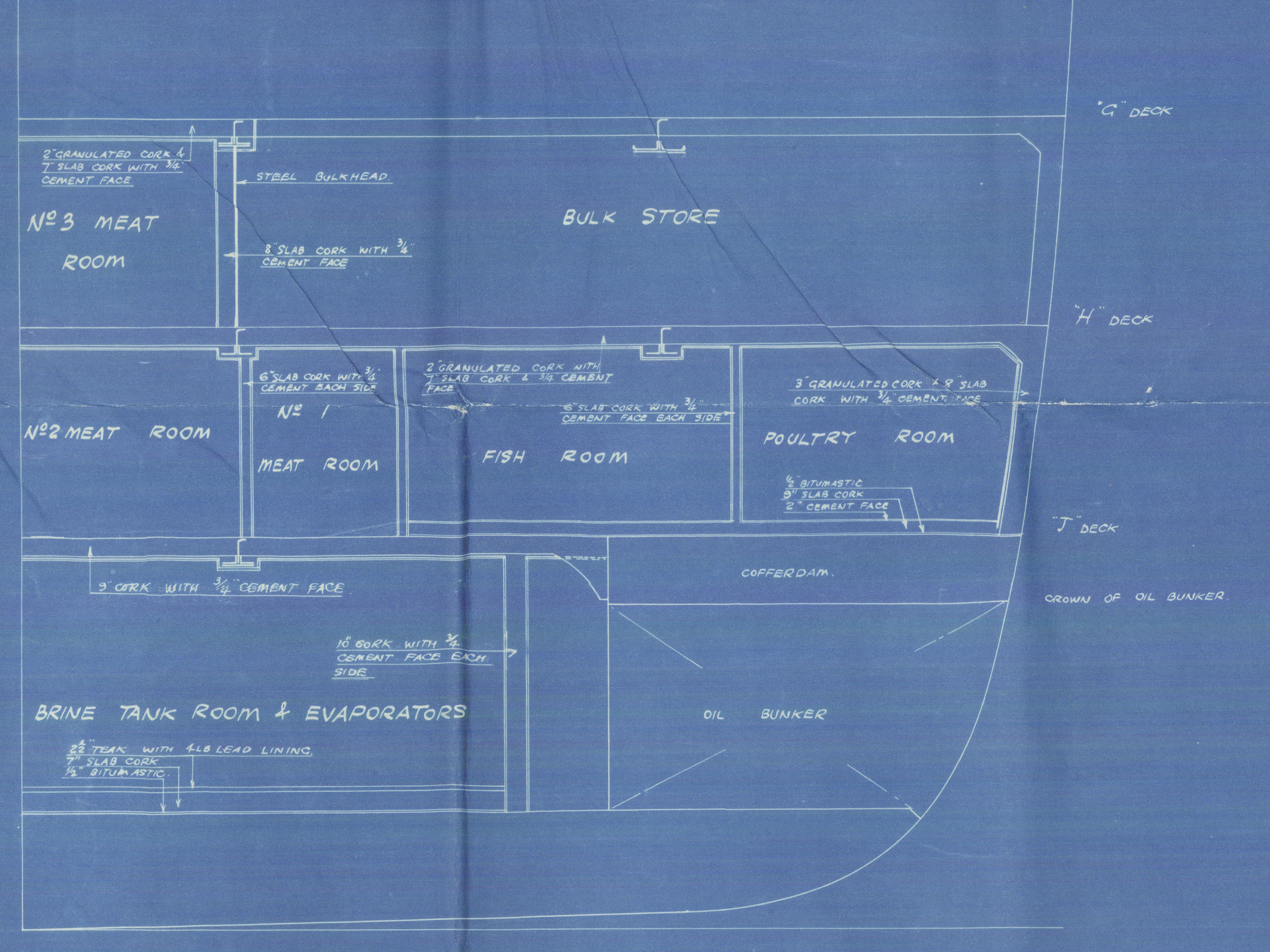
SHEET 1 - ELEVATION AND SECTIONS

SECTION AT FRAME 144
LOOKING AFT



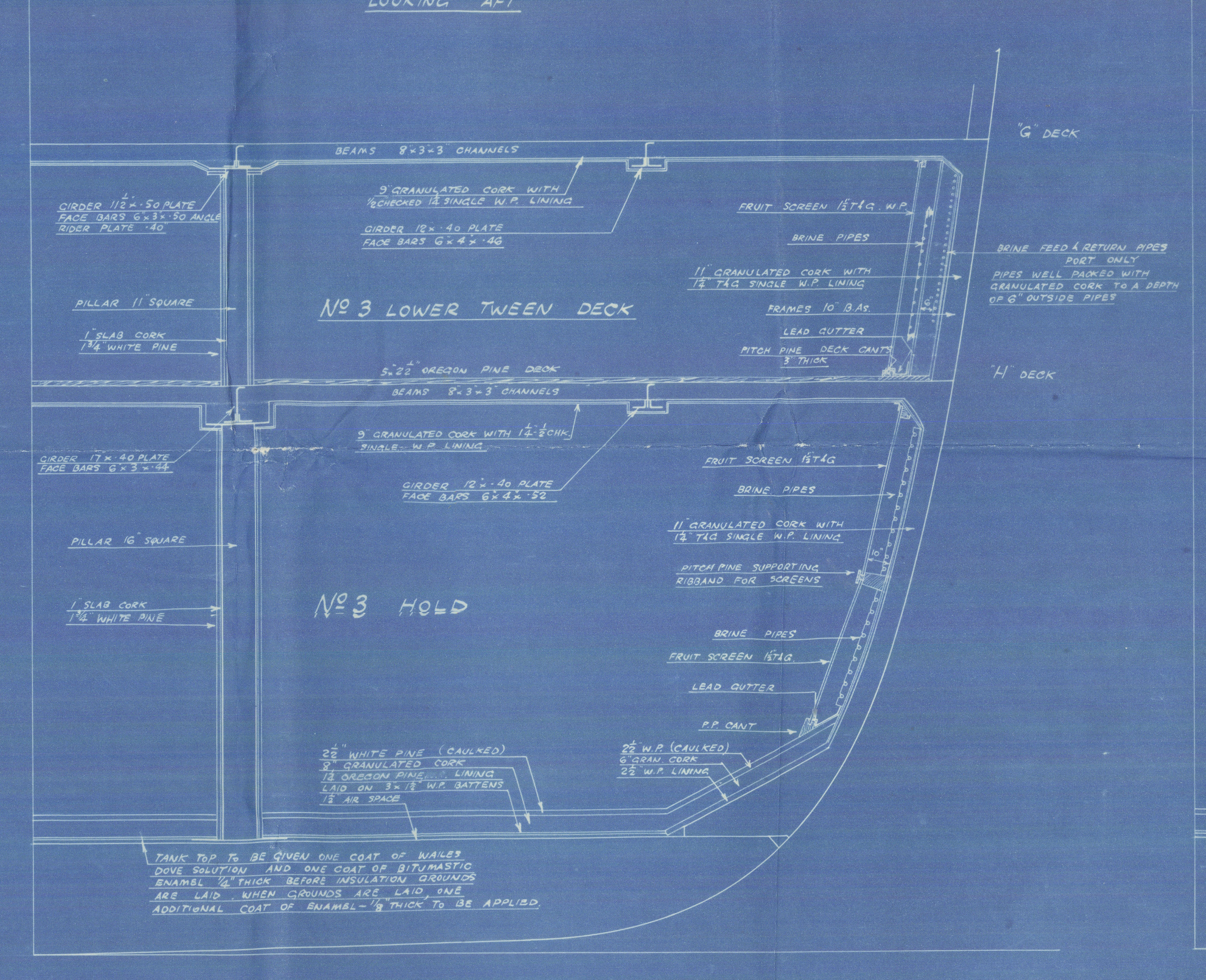
"G" DECK
2" GRANULATED CORK & 7" SLAB CORK WITH 3/4" CEMENT FACE
PILLAR 11" SQUARE
No 3 MEAT ROOM
BULK STORE
FLOUR
STORE
ROOM
REFRIGERATING MACHINERY ROOM
OIL BUNKER

SECTION AT FRAME 150
LOOKING AFT



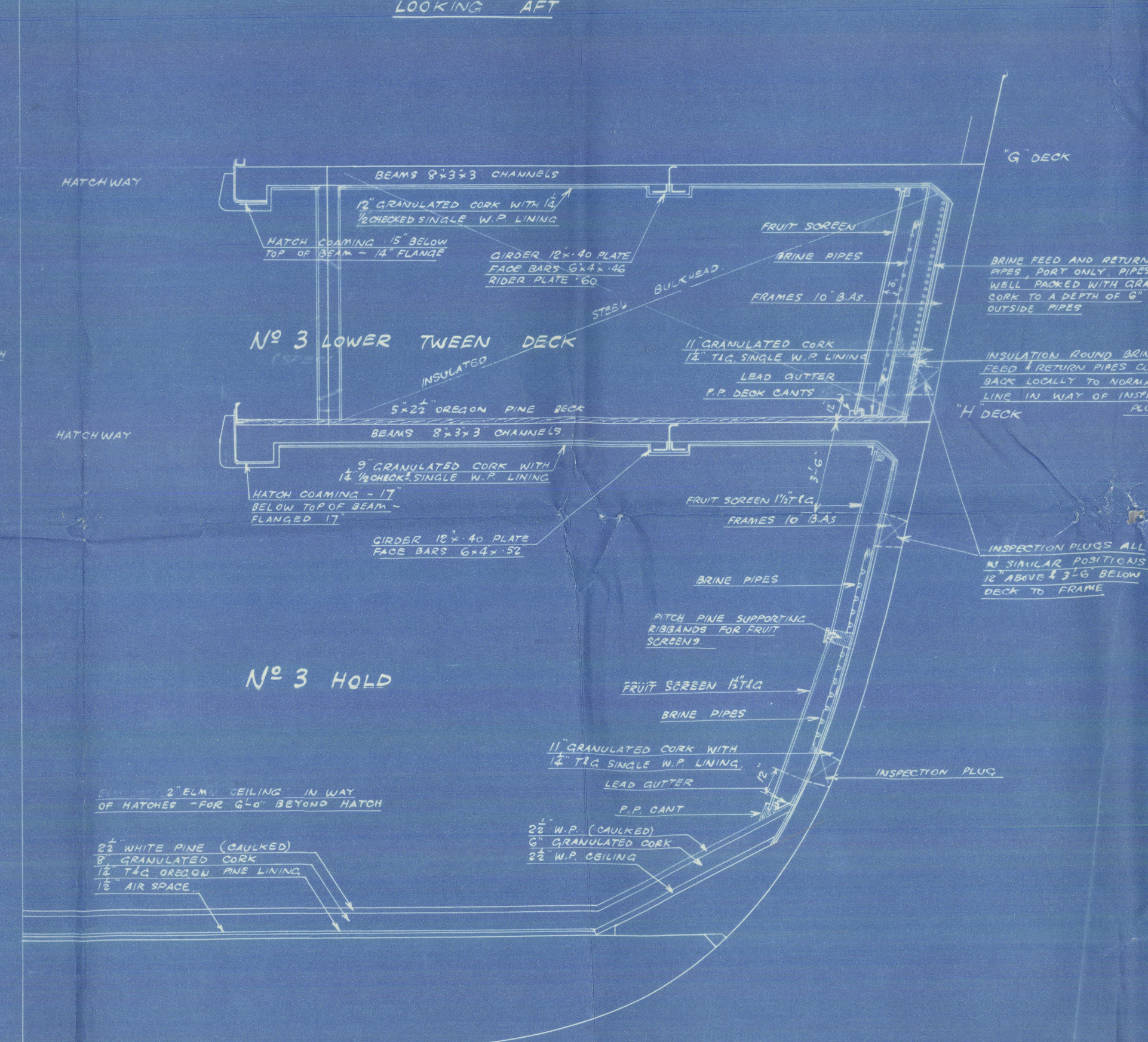
"G" DECK
STEEL BULKHEAD
No 3 MEAT ROOM
BULK STORE
No 2 MEAT ROOM
No 1 REEF ROOM
FISH ROOM
POULTRY ROOM
BRINE TANK ROOM & EVAPORATORS
OIL BUNKER

SECTION AT FRAME 163
LOOKING AFT



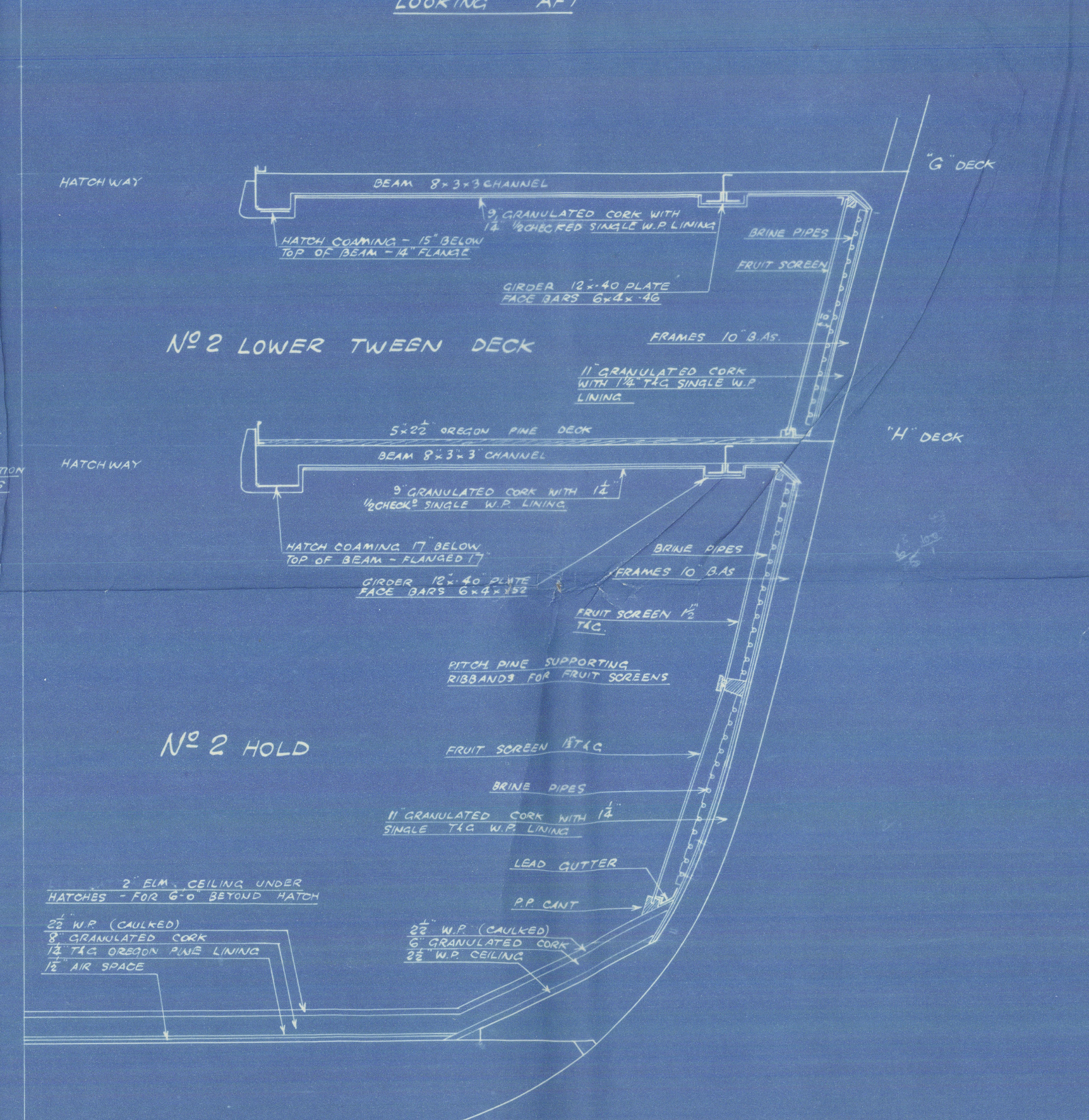
"G" DECK
No 3 LOWER TWEEN DECK
No 3 HOLD

SECTION AT FRAME 172
LOOKING AFT



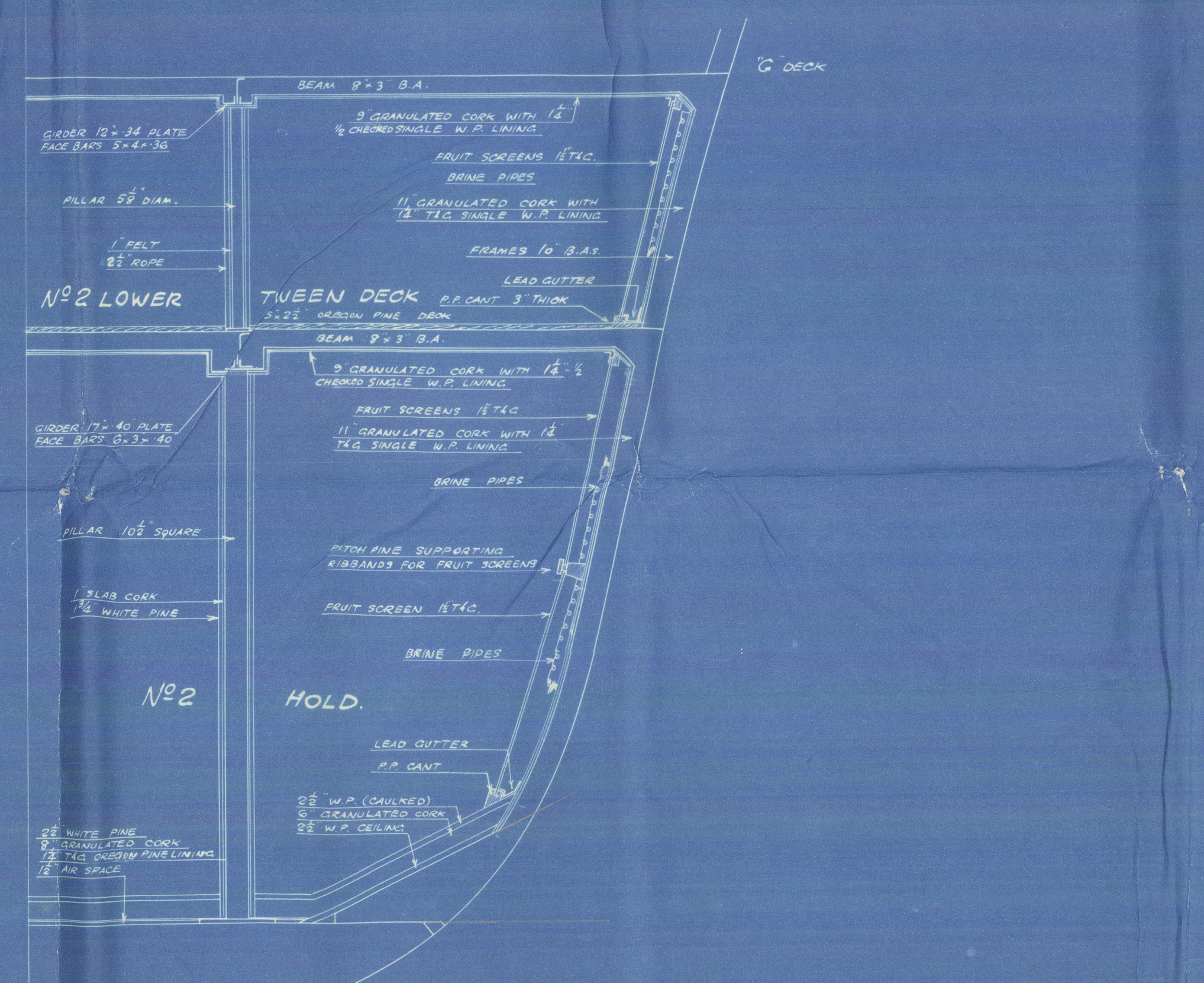
"G" DECK
HATCHWAY
No 3 LOWER TWEEN DECK
No 3 HOLD

SECTION AT FRAME 186
LOOKING AFT



"G" DECK
HATCHWAY
No 2 LOWER TWEEN DECK
No 2 HOLD

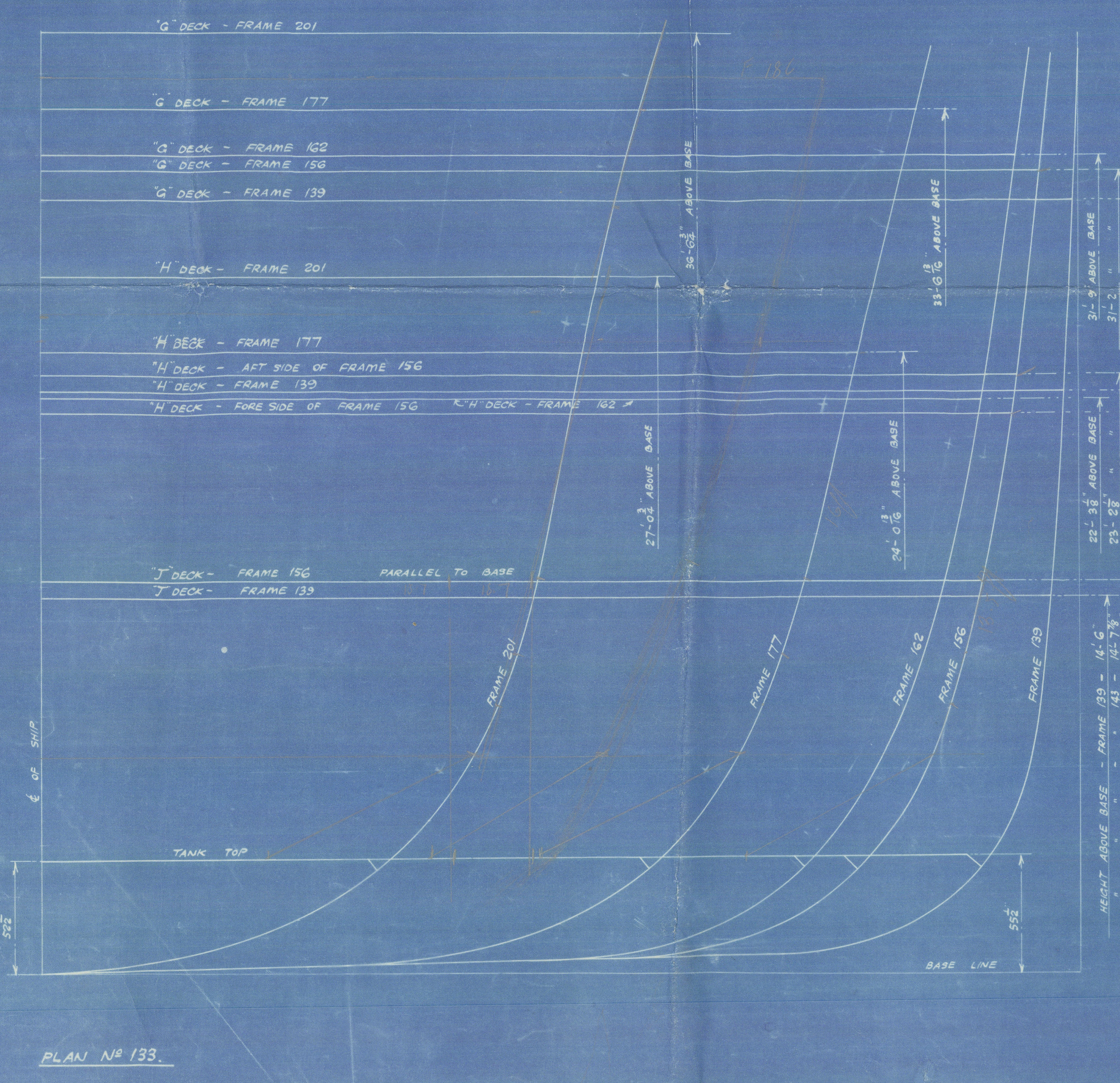
SECTION AT FRAME 196
LOOKING AFT



"G" DECK
No 2 LOWER TWEEN DECK
No 2 HOLD

ALL STEELWORK BEHIND INSULATION, EXCEPT TANK TOP, COVERED WITH VICKERS BITUMINOUS SOLUTION.
(SEE SECTION FOR TANK TOP)

BULKHEAD SECTIONS



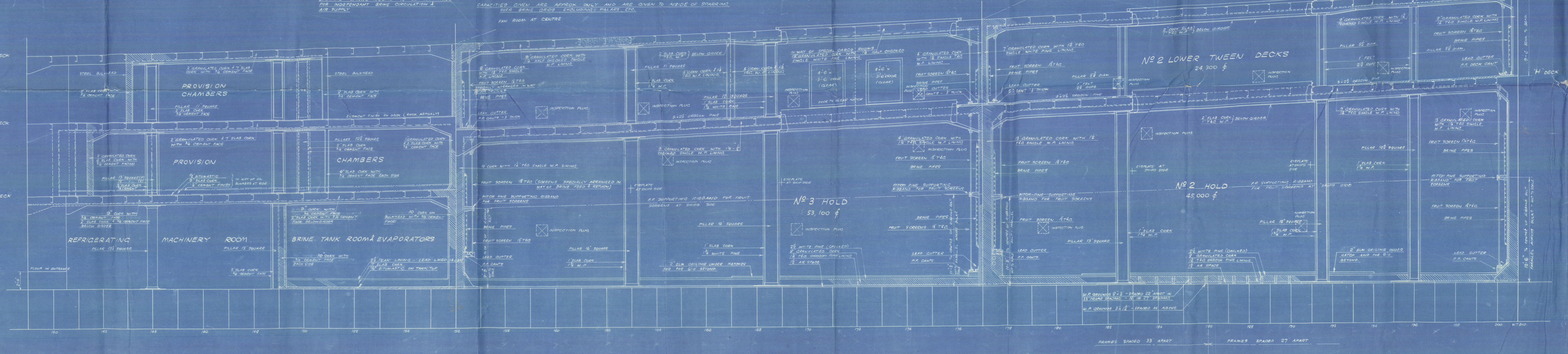
"G" DECK - FRAME 201
"G" DECK - FRAME 177
"G" DECK - FRAME 162
TANK TOP
5' 2 1/2"

ELEVATION AT LINE OF 7'- 1 1/2" GIRDER
LOOKING TO PORT

SPECIAL CARGO ROOMS TO BE ARRANGED FOR INDEPENDANT BRINE CIRCULATION & AIR SUPPLY

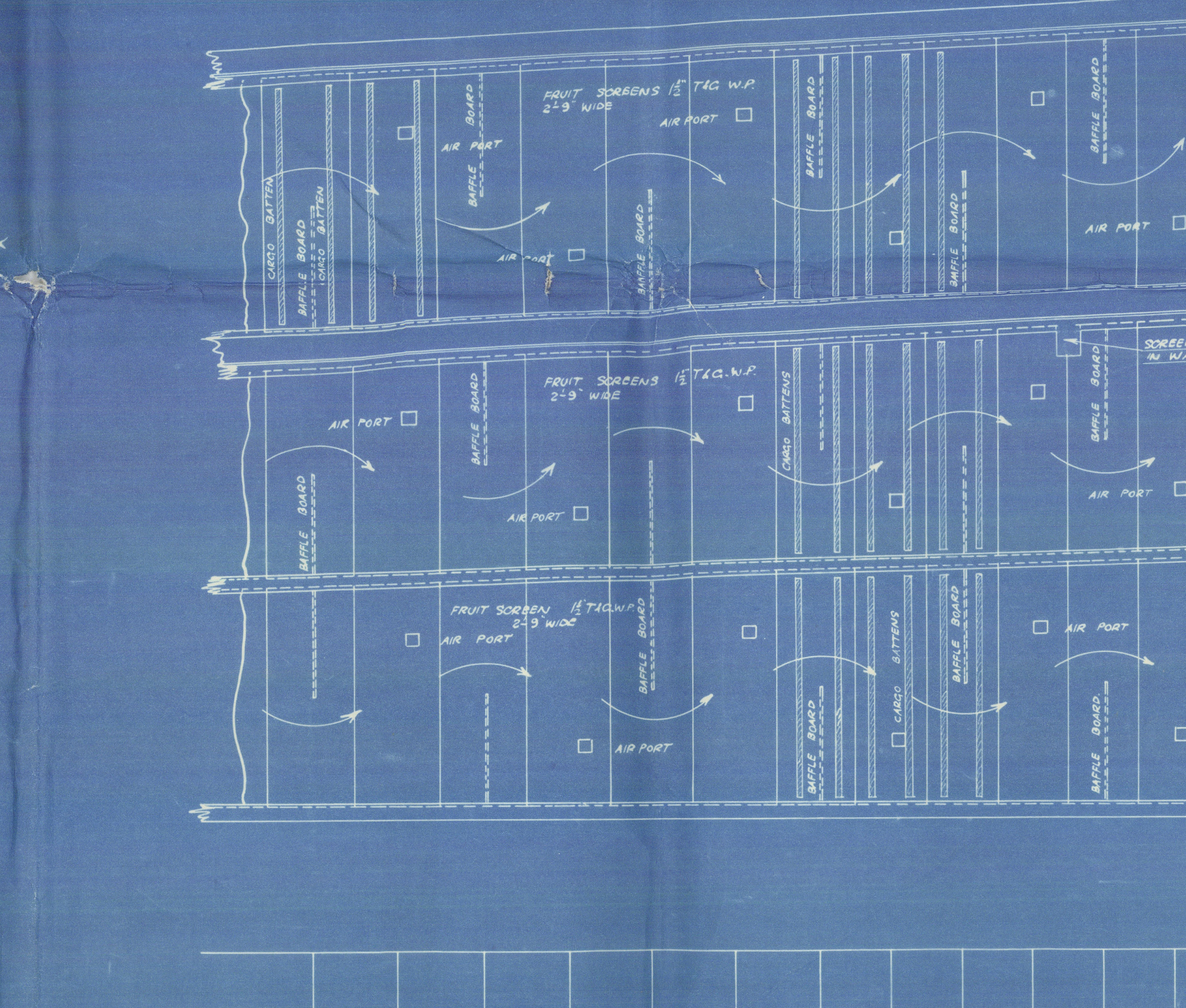
CAPACITIES GIVEN ARE APPROX. ONLY AND ARE GIVEN TO INSIDE OF SPARRING OVER BRINE GRIDS, EXCLUDING PILLARS, ETC.

FAN ROOM AT CENTRE



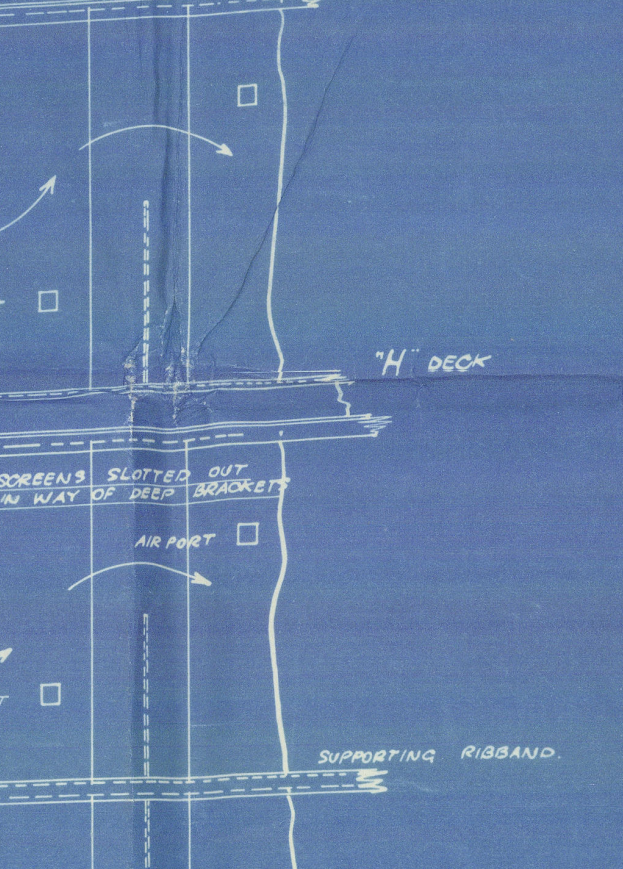
PROVISION CHAMBERS
PROVISION CHAMBERS
REFRIGERATING MACHINERY ROOM
BRINE TANK ROOM & EVAPORATORS
STEEL BULKHEAD
8" SLAB CORK WITH 3/4" CEMENT FACE
9" GRANULATED CORK WITH 1 1/4" HALF CHECKED SINGLE W.P. LINING
8" GRANULATED CORK WITH 1 1/2" T&G SINGLE W.P. LINING
FRUIT SCREEN 1 1/2" T&G SPECIALLY ARRANGED IN WAY OF AIR TRUNKS
BRINE PIPES
INSPECTION PLUG
PILLAR 11" SQUARE
PILLAR 12" SQUARE
No 2 LOWER TWEEN DECKS
No 3 HOLD
No 2 HOLD
4'-6" × 3'-6" DOOR (CLEAR)
TANK TOP

TYPICAL ELEVATION OF FRUIT SCREENS
PORT SIDE LOOKING TO PORT



"G" DECK
FRUIT SCREENS 1 1/2" T&G W.P. 2'-9" WIDE
AIR PORT
BAFFLE BOARD
TANK TOP

SECTION IN WAY OF BAFFLE BOARD



"G" DECK
FRUIT SCREEN

The remaining requirements of the Rules for Refrigerating Machinery and Appliances to be complied with.
13-10-30.

PLAN No 133.

Vickers-Armstrongs Ld Nos 663/664

Bossed Framing

No 663 - T. S. S. Strathnaver
Barrow F. E. Rpt No 2414

No 664 - T. S. S. Strathaird
Barrow F. E. Rpt No 2433

vv

003418-003420-0002

27.3.30

NAVAL CONSTRUCTION WORKS
SHIPYARD DEPT.
VICKERS-ARMSTRONGS LTD.
19 MAR. 1930
BARROW-IN-FURNESS

T.S.S. Nº 663-4

BOSSED FRAMING Etc

SCALE ¼" = 1 FOOT.

ALL SECTIONS DRAWN LOOKING AFT.

"F" DK
3'-6"
16'-0" NOT TO SCALE
"G" DECK
W.T. Bhd Frs 8-10
"H" DK
CROWN OF TANK
WASH
H. DECK
ELEVATION AT C.L LINE
AFTER PEAK
KEEL BAR SINGLE 4 × 4 × .53
KEEL BARS DOUBLE
5 × 5 DOUBLE
FRAMES SPACED 24" APART
FRAMES SPACED 33" APART
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
SECTION AT Fr 31
Fr 30 SIMILAR
9-⅞ RIVETS IN EACH ARM
PLATE 12 × .42
TUNNEL FLAT
SECTION AT Fr 32
BKT SIMILAR TO Fr 31
SIMILAR TO Fr 31
SECTION AT Fr 33
SECTION AT Fr 34
DETAIL OF GUSSET PLATE AT Frs 30, 31, 33 & 34
⅞ DIA. RIVETS
15 CONNECTION TO WEB FR
FRAME BARS DOUBLE AT Fr 30
x Double angles
SECTION AT Fr 1
W.T. Bhd
STIFFrs 24" APART
SECTION AT Fr 2
9-⅞ RIVS EACH WAY
6-⅞ RIVS
STEERING GEAR SEAT
CHANNEL
.40 WASH PLATE
SECTION AT Fr 3
SIMILAR TO Fr 2
SECTION AT Fr 4
SIMILAR TO Fr 2
SECTION AT Fr 5
SECTION AT Fr 20
Fr 21 SIMILAR
BKT SIMILAR TO Fr 31
SECTION AT Fr 22
Fr 23 SIMILAR
SECTION AT Fr 26
Fr 24, 25 & 27 SIMILAR
EXCEPT WHERE OTHERWISE MARKED
SECTION AT Fr 29
Fr 28 SIMILAR
FOR CHAN PILLARS & BKTS SEE SECTION AT Fr 26
W.T. Bhd Nº 15
STIFFS SPACED 24" APART
PLAN AT UPPER FLAT
Frs 1-12
PLAN AT SIDE STRINGER
SHELL LUGS 3½ × 3½ × .50
CONTINUOUS FACE ANGLE 7 × 3½ × .56
INTERCOSTAL PLATES .50
STRUTS
W.T. BHD Nº 1
W.T.B. 12
LOWER FLAT
.80 PLATE
PLAN Nº 54
SECTION AT Fr 6
SECTION AT Fr 7
SECTION AT Fr 8
SECTION AT Fr 9
SECTION AT Fr 10
SECTION AT Fr 11
H. DK
UPPER FLAT
LOWER FLAT
fitted
SECTION AT Fr 12
W.T. Bhd TUNNEL FLAT TO H. DK
Fr COLLARED
RIVETS CLOSED UP TO 4 DIAS. FOR 15L LENGTH OF STIFF. IN LIEU OF BKT
OTHER STIFFS. CARRIED BELOW TUNNEL FLAT IN LIEU OF BKT
non existent see plan view
SECTION AT Fr 14
Fr 13 SIMILAR
SECTION AT Fr 16
Fr 17 SIMILAR
SECTION AT Fr 18
Fr 19 SIMILAR
TUNNEL FLAT.
DOUBLE FRs 4 × 4 × .54

Additional stiffening under steering gear to S.S.

N Size & details of pillars to be considered in conjunction with pillar & girder plan

E.S.
27. 3. 30.

003418-003420-0002

Vickers. Armstrongs Ld No 663 & 664

Main Shafting

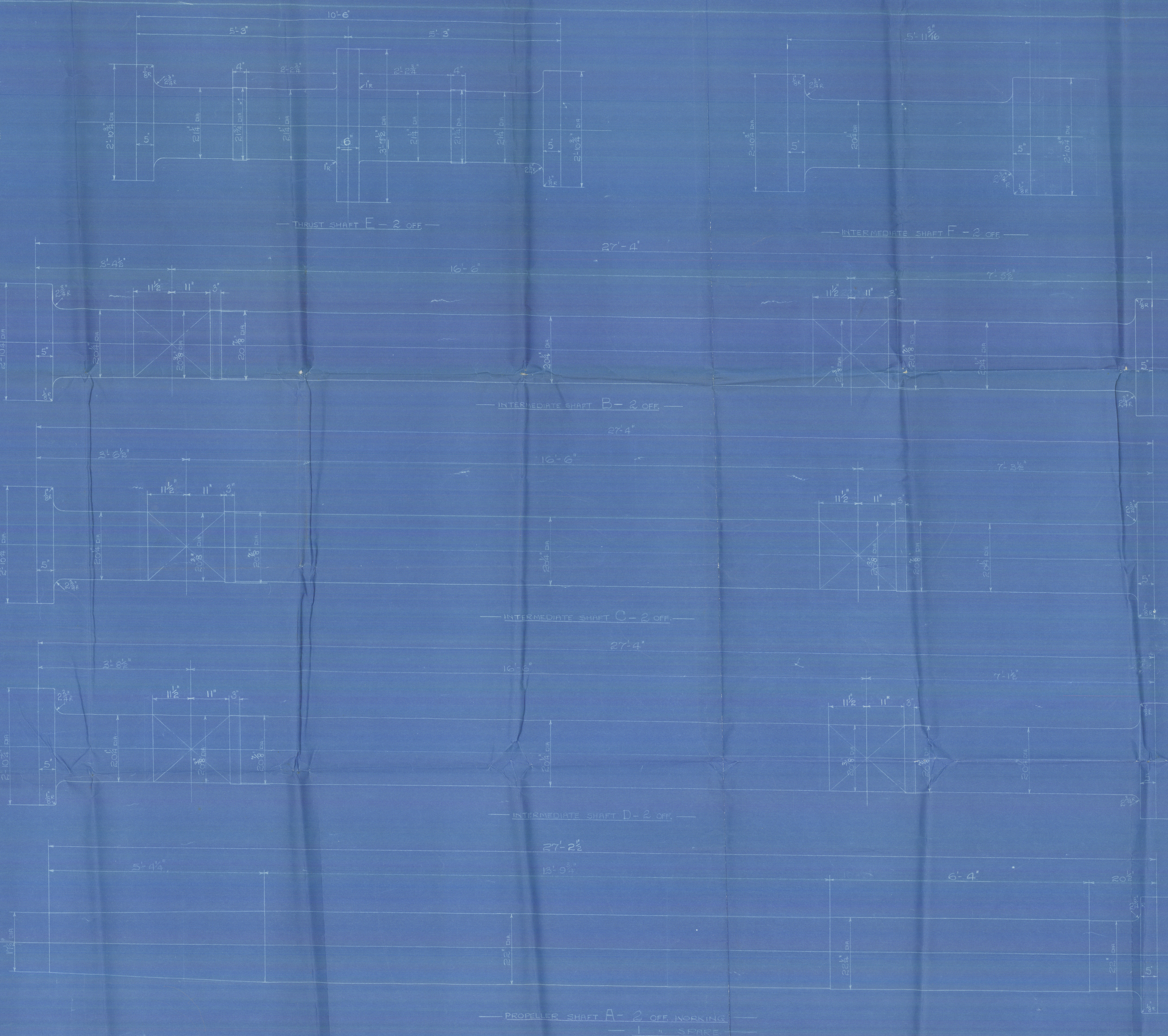
No 663 — T. S. S. Strathnaver
Barrow F. E. Rpt No 2414

No 664 — T. S. S. Strathaird
Barrow F. E. Rpt No 2433

© 2020
Lloyd's Register
Foundation

003418-003420-0006

260


10'-6"
5'-3"
5'-3"
4"
2'-2¾"
2'-2¾"
4"
⅛"R
2¾"R
1"R
2'-10¾" DIA
5"
21¼" DIA
21¾" DIA
21¼" DIA
6"
3'-7½" DIA
21¼" DIA
21¾" DIA
21¼" DIA
5"
2'-10¾" DIA
THRUST SHAFT E – 2 OFF
5'-11 3/16"
2'-10¾" DIA
5"
20¼" DIA
5"
2'-10¾" DIA
INTERMEDIATE SHAFT F – 2 OFF
27'-4"
3'-4½"
16'-6"
7'-5½"
11½"
11"
3"
2'-10¾" DIA
20¼" DIA
20⅜" DIA
INTERMEDIATE SHAFT B – 2 OFF
27'-4"
3'-6⅛"
16'-6"
7'-3⅛"
11½"
11"
3"
2'-10¾" DIA
20⅜" DIA
20¼" DIA
INTERMEDIATE SHAFT C – 2 OFF
27'-4"
3'-6⅛"
16'-3"
7'-1⅛"
11½"
11"
3"
2'-10¾" DIA
20⅜" DIA
20¼" DIA
INTERMEDIATE SHAFT D – 2 OFF
27'-2½"
5'-4¼"
15'-9"
6'-4"
22" DIA
22¼" DIA
2'-10¾" DIA
5"
PROPELLER SHAFT A – 2 OFF WORKING
1 " SPARE

ALL SHAFTING TO BE FORGED FROM INGOT STEEL & TO BE FREE FROM FLAWS & DEFECTS OF ANY KIND.

ALL SHAFTING TO SATISFY THE BOARD OF TRADE, LLOYD'S & THE P. & O. S. N. Co's REQUIREMENTS.

EACH SHAFT TO HAVE ITS DISTINGUISHING LETTER PAINTED ON BEFORE DELIVERY

MAX.M TENSILE STRENGTH = 32 TONS

MIN.M " " = 28 "

ELONG.N = 29% ON B.S. TEST PIECE "C" OR "D"

BENDING ANGLE NOT LESS THAN 180° RAD. ¼"

QUANTITIES GIVEN ARE FOR ORDER Nº 663 ONLY

QUANTITIES TO BE SIMILAR " " " 664.

NAVAL CONSTRUCTION WORKS
ENGINE DEPT.
REG. No.
VICKERS-ARMSTRONGS LTD.
13 FEB 1930
BARROW-IN-FURNESS

DETAILS OF SHAFTING

SCALE – 1" = 1 FOOT

FORGE DRAWING

DRG. Nº 663/171

2 SHEETS – SHEET Nº 2

ORDER Nº 663 & [illegible]

0034IV 00340X0006

Vickers-Armstrongs Ld No 663/664

Shaft Brackets

No 663 - T.S.S. Strathnaver
Barrow Rpt No 2414

No 664 - T.S.S. Strathaird
Barrow Rpt No 2433

003418-003420-0007

TWIN SCREW STEAMERS - N°s 663-4

SHAFT BRACKETS

28/3/30

SCALE :- ½ INCH = 1 FOOT AND AS MARKED

NOTES :-

BRACKETS TO BE OF CAST STEEL
TO BE IN ACCORDANCE WITH LLOYDS AND BOARD OF TRADE TESTS
AND REQUIREMENTS FOR CLASS 100 A1 AND PASSENGER CERTIFICATE

SEA SPEED - 20 KNOTS
TRIAL SPEED - 22 KNOTS
S. H. P. - 14 000 PER SHAFT
REVS PER MIN. - 125
DIA OF PROPELLER - 19'- 0"
" " TAIL SHAFT - 22" - 24" OVER LINER

SHAFT CENTRES

	HEIGHT ABOVE BASE	OUTREACH FROM ℄
FRAME 6 - CENTRE OF PROP.	10'- 9"	13'- 3
" 58 -	13'- 7½	10'- 6

NOTES

① APPROXIMATE WEIGHT OF EACH CASTING - 16½ TONS
② MOULDS WILL BE SUPPLIED BY SHIPBUILDERS - CONTRACTORS TO PROVIDE PATTERNS
③ ALL RIVET AND TAP HOLES TO BE DRILLED BY CONTRACTOR
④ PATTERNS WHEN READY, TO BE CHECKED BY SHIPBUILDERS REPRESENTATIVE WHO WILL VISIT CONTRACTORS WORKS FOR THE PURPOSE, AND TO MARK OFF POSITIONS OF ALL RIVET HOLES AND TAPPED HOLES
⑤ BARREL TO BE ROUGH BORED AND ENDS ROUGH MACHINED BY CONTRACTORS
⑥ LARGE FILLETS TO BE PROVIDED THROUGHOUT AND ALL SUDDEN CHANGES OF SECTION TO BE AVOIDED AS FAR AS POSSIBLE
⑦ RABBETS IN CASTING TO BE SQUARE DRESSED BY CONTRACTORS
⑧ RIVET HOLES DRILLED 5/64" LARGER IN DIAMETER THAN RIVETS WHICH THEY ARE TO TAKE
⑨ CASTINGS TO BE MACHINED WHERE TINTED RED
⑩ CASTINGS ARE TO BE CLEAN, SOUND, AND FREE FROM ALL TWIST AND BLOW HOLES, ETC.
⑪ ALL RIVET HOLES TO SUIT SHIPBUILDERS PATTERN RIVET

CONSTRUCTION WORKS
SHIPYARD DEPT.
ERS - ARMSTRONGS LTD.
21 MAR. 1930
ARROW-IN-

SECTION AT FRAME 8

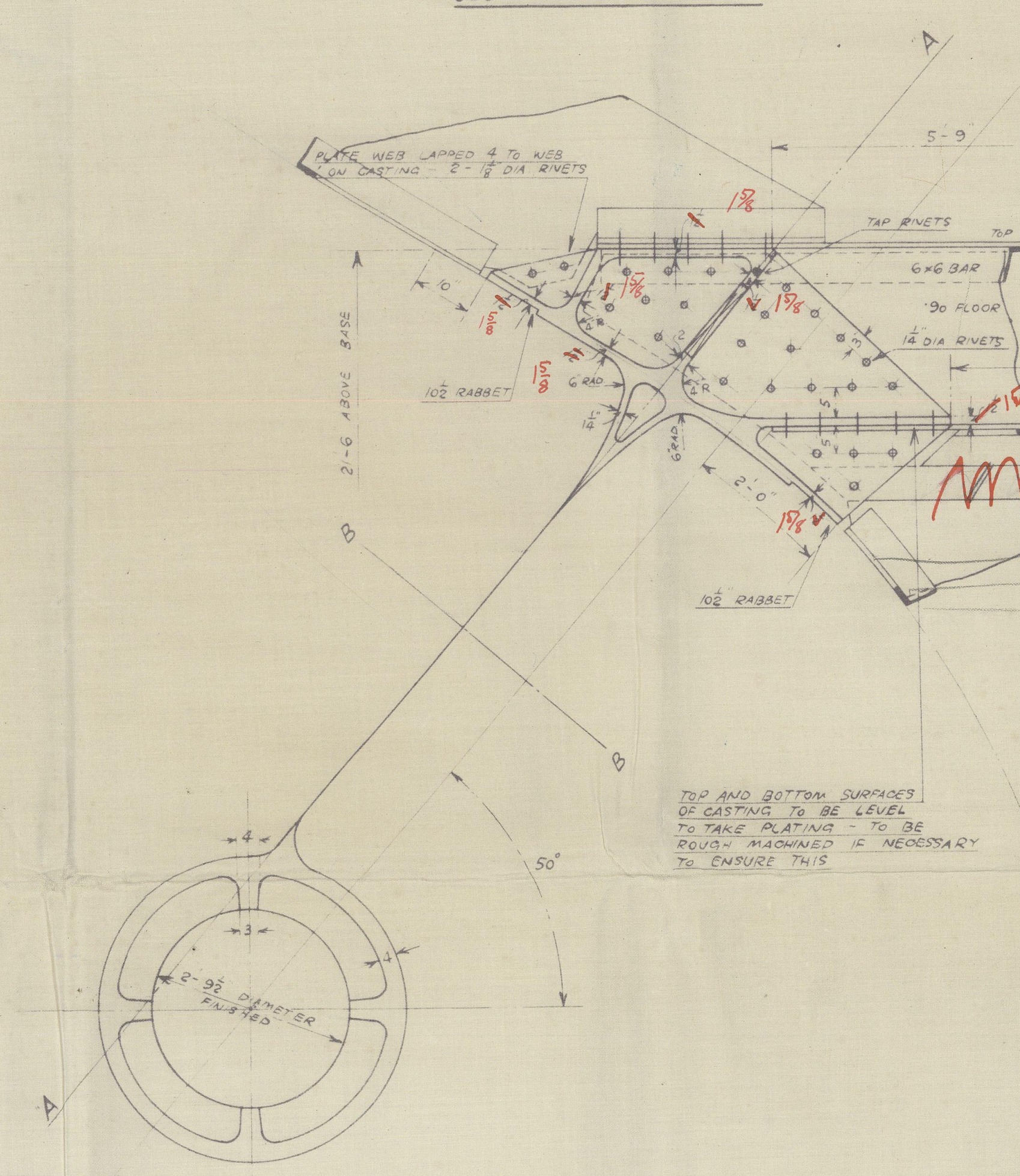
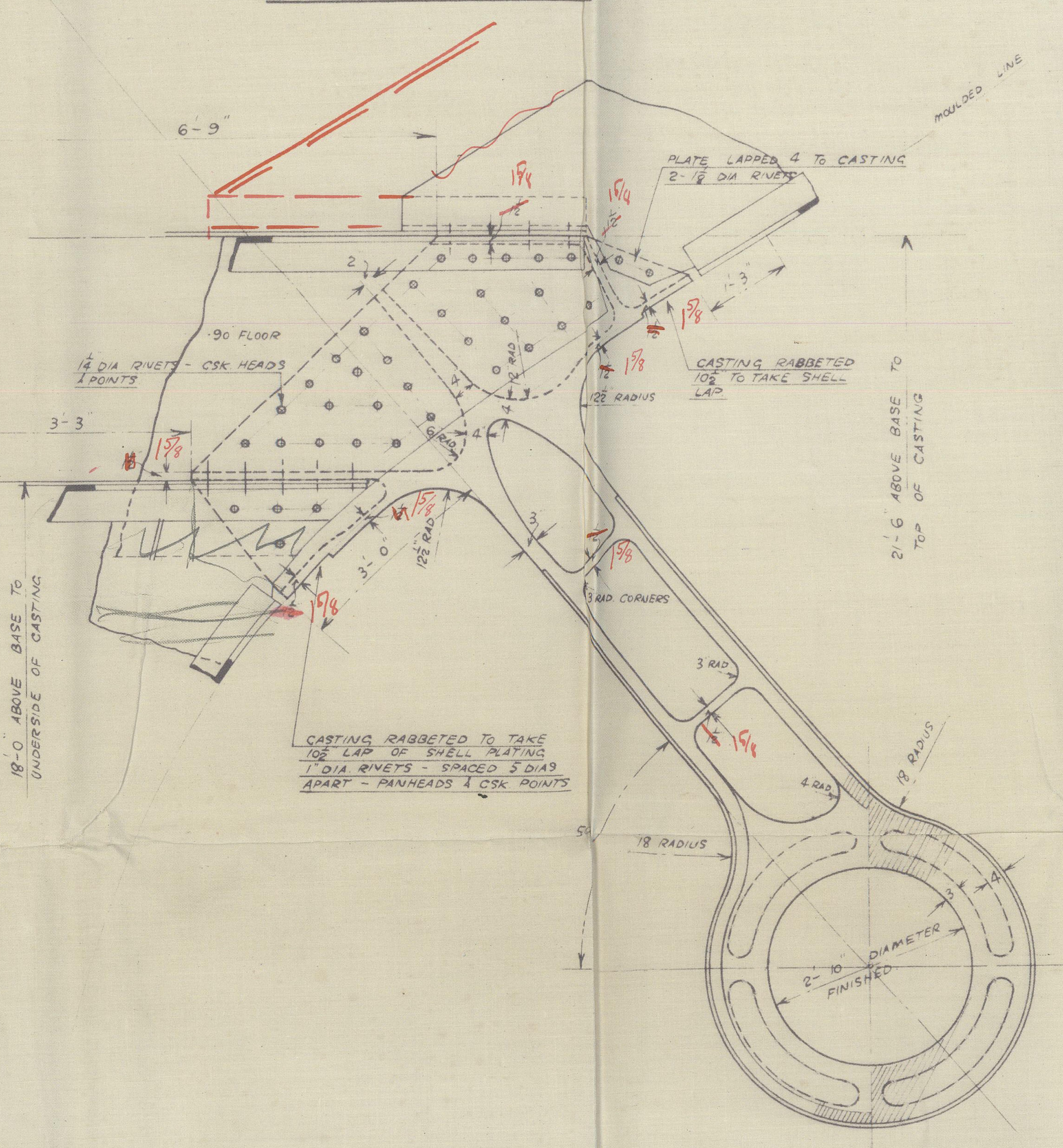


PLATE WEB LAPPED 4 TO WEB ON CASTING - 2 - 1⅛ DIA RIVETS
TAP RIVETS
TOP PLATE ·80
6×6 BAR
·90 FLOOR
1¼ DIA RIVETS
5'-9"
3'-3"
2'-0"
21'-6 ABOVE BASE
10½ RABBET
19'-0 ABOVE BASE TO UNDERSIDE OF CASTING
A
B
50°
2'-9½ DIAMETER FINISHED
1⅝

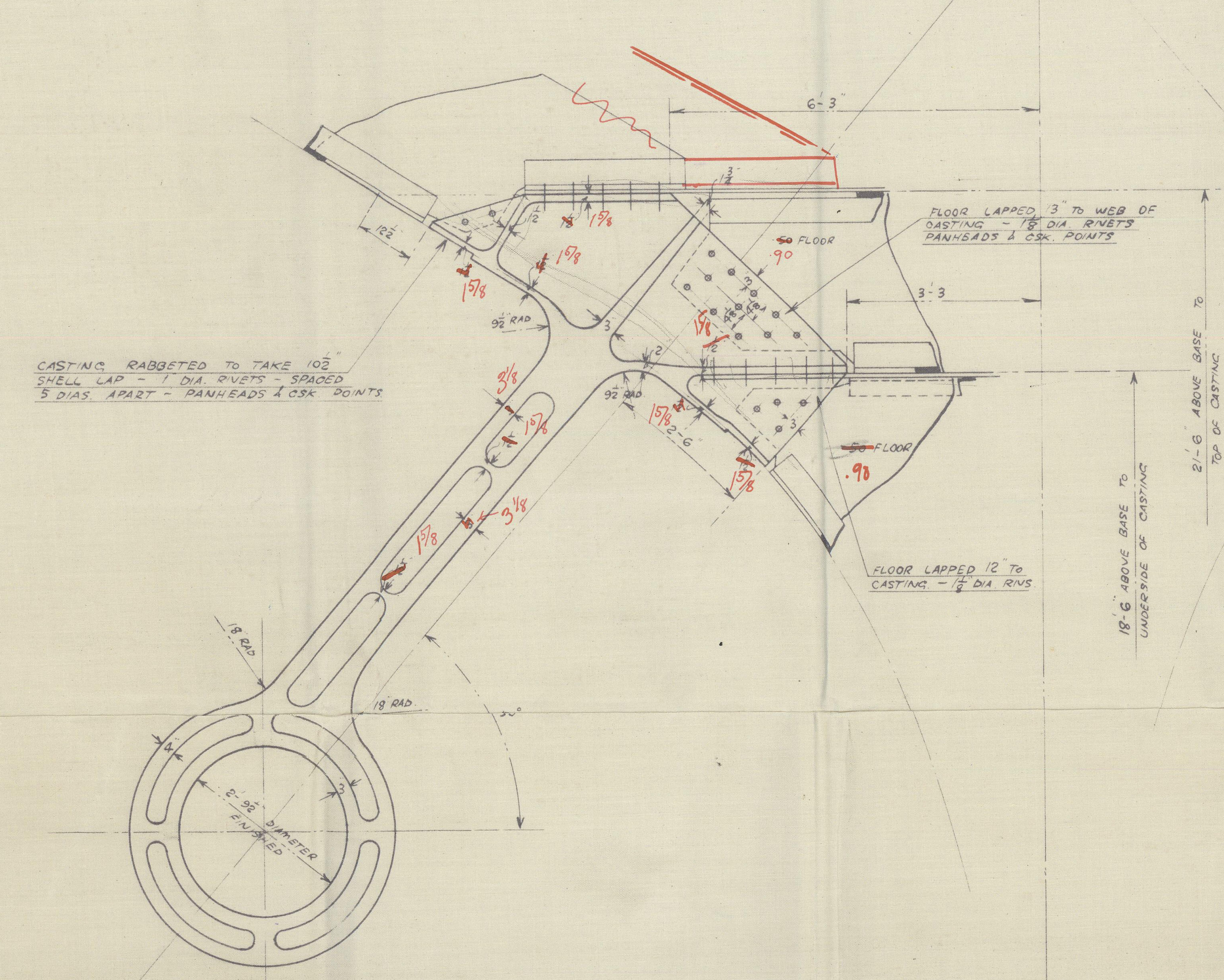
TOP AND BOTTOM SURFACES OF CASTING TO BE LEVEL TO TAKE PLATING - TO BE ROUGH MACHINED IF NECESSARY TO ENSURE THIS

SECTION AT FRAME 10


MOULDED LINE
6'-9"
PLATE LAPPED 4 TO CASTING 2 - 1⅛ DIA RIVETS
·90 FLOOR
1¼ DIA RIVETS - CSK. HEADS & POINTS
CASTING RABBETED TO TAKE 10½ TO TAKE SHELL LAP
12½ RADIUS
3'-3"
3'-0"
3 RAD. CORNERS
18 RADIUS
21'-6 ABOVE BASE TO TOP OF CASTING
18'-0 ABOVE BASE TO UNDERSIDE OF CASTING
℄ OF SHIP
2'-10" DIAMETER FINISHED
1⅝

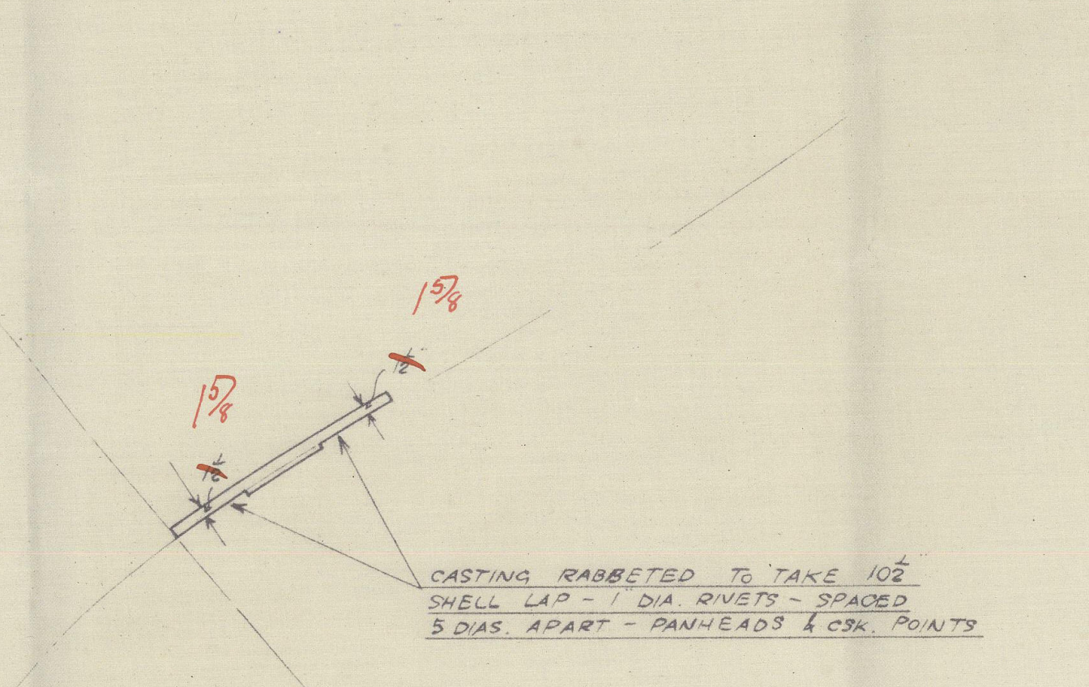
CASTING RABBETED TO TAKE 10½ LAP OF SHELL PLATING 1" DIA. RIVETS - SPACED 5 DIAS APART - PANHEADS & CSK POINTS

SECTION AT FRAME 9


6'-3"
3'-3"
FLOOR LAPPED 3" TO WEB OF CASTING - 1⅛ DIA. RIVETS PANHEADS & CSK. POINTS
~~·50~~ FLOOR ·90
FLOOR LAPPED 12" TO CASTING - 1⅛" DIA. RIVS
9½ RAD
18 RAD
21'-6 ABOVE BASE TO TOP OF CASTING
18'-6 ABOVE BASE TO UNDERSIDE OF CASTING
2'-9½ DIAMETER FINISHED
1⅝
3⅛

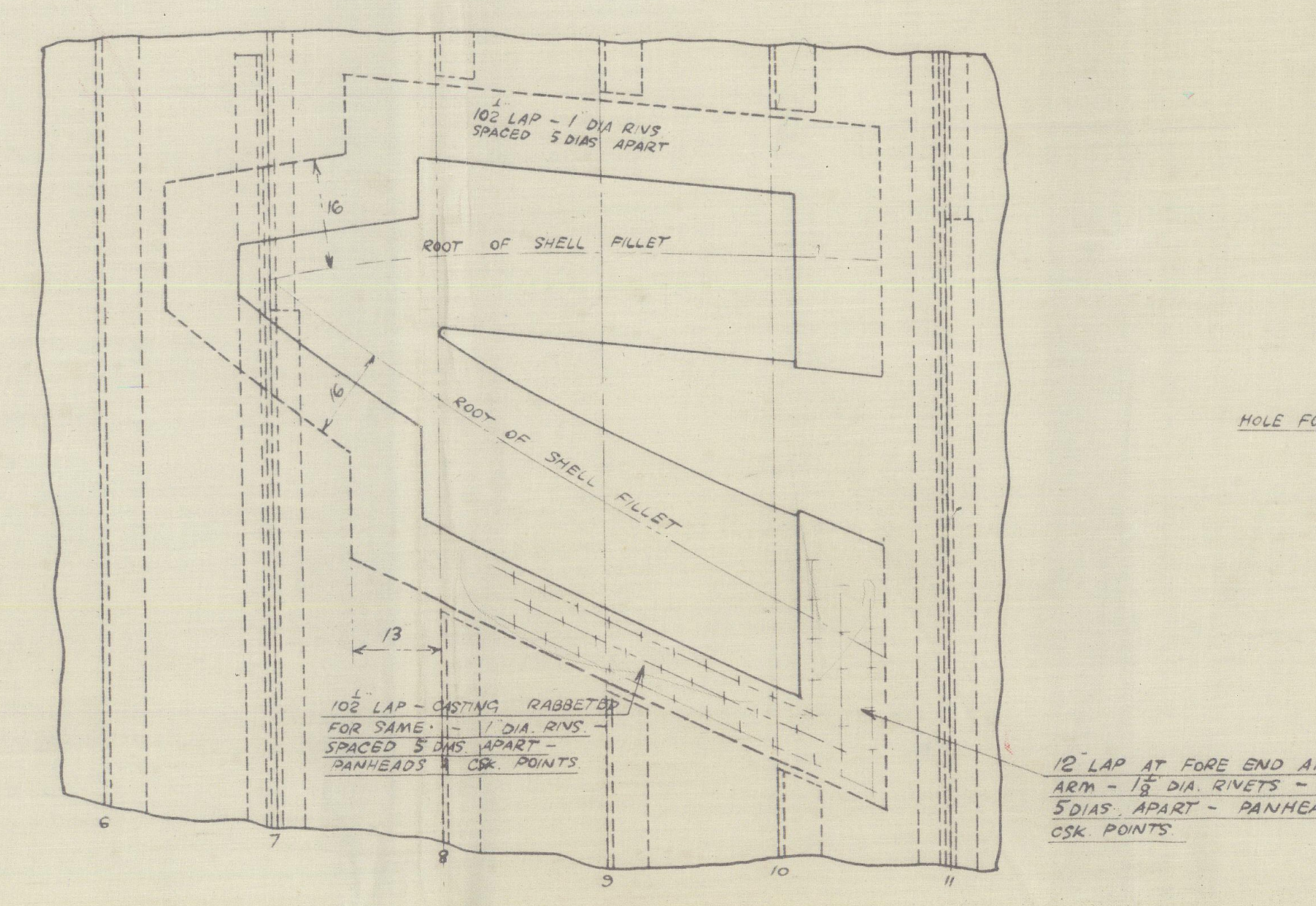
CASTING RABBETED TO TAKE 10½" SHELL LAP - 1 DIA. RIVETS - SPACED 5 DIAS. APART - PANHEADS & CSK. POINTS.

SECTION AT FRAME 7

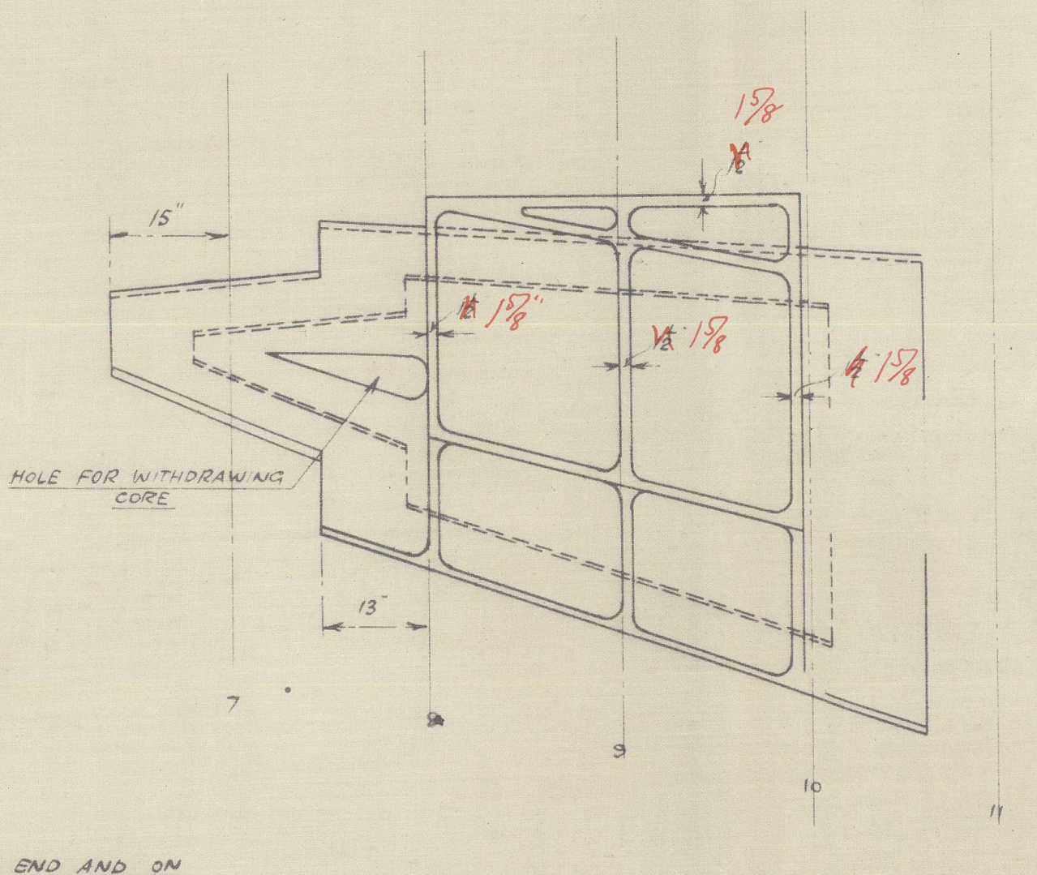


CASTING RABBETED TO TAKE 10½ SHELL LAP - 1 DIA. RIVETS - SPACED 5 DIAS. APART - PANHEADS & CSK. POINTS

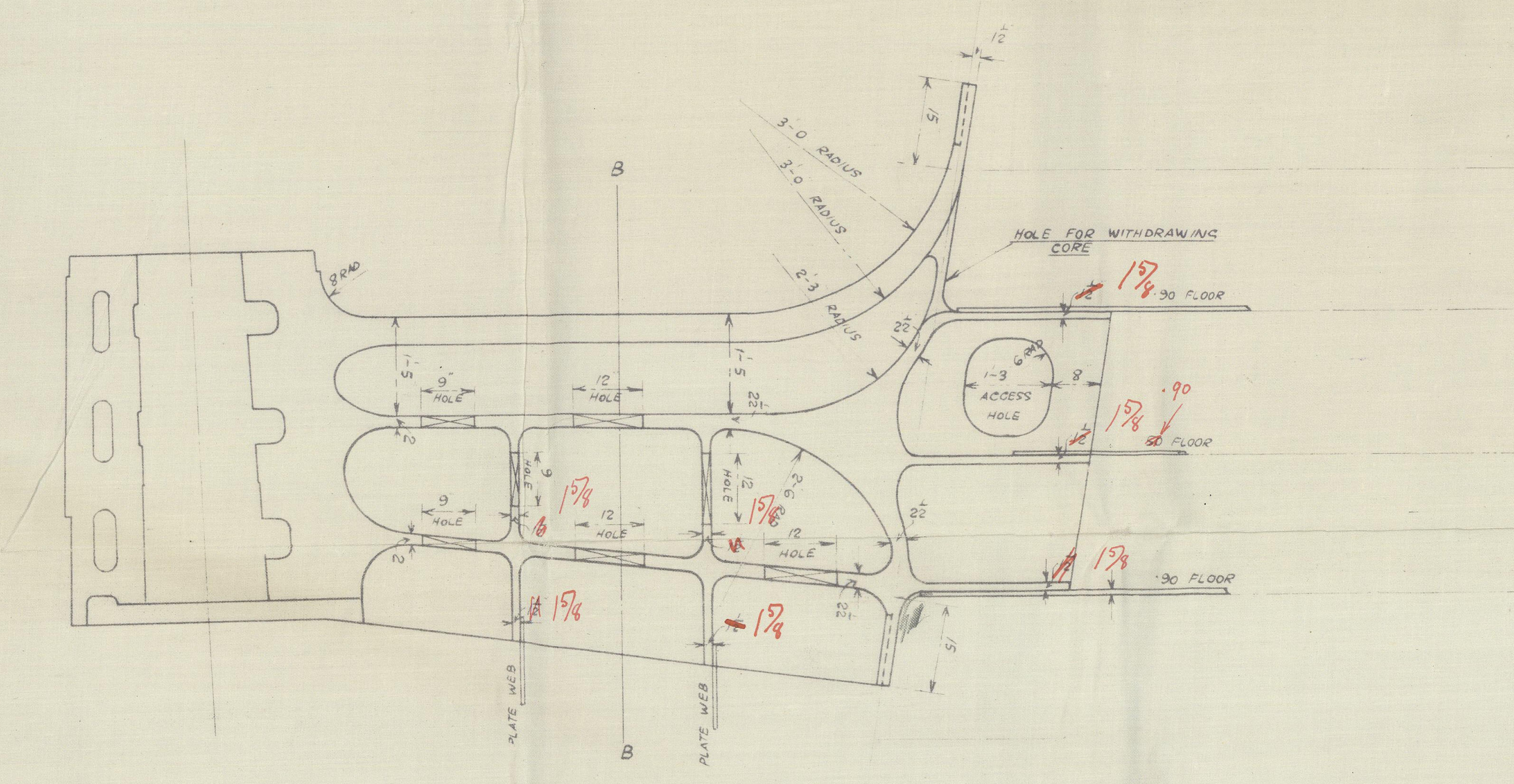
OUTSIDE ELEVATION OF PALM
DRAWN NORMAL TO SHELL


10½ LAP - 1 DIA RIVS SPACED 5 DIAS APART
ROOT OF SHELL FILLET
ROOT OF SHELL FILLET
16
16
13
10½ LAP - CASTING RABBETED FOR SAME - 1 DIA. RIVS. - SPACED 5 DIAS. APART - PANHEADS & CSK. POINTS
12" LAP AT FORE END AND ON ARM - 1⅛ DIA. RIVETS - SPACED 5 DIAS. APART - PANHEADS & CSK. POINTS
6
7
8
9
10
11

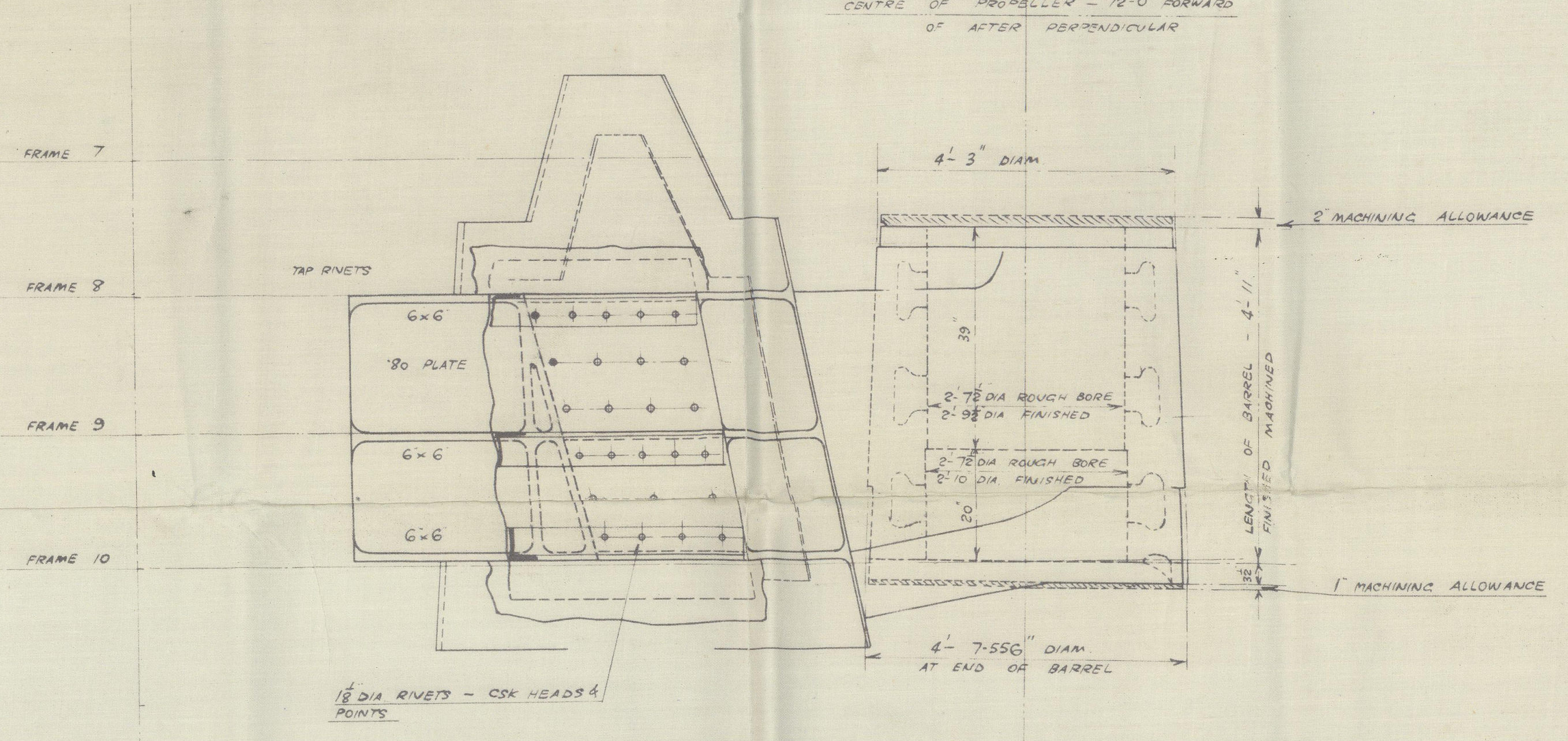
ELEVATION LOOKING FROM ℄


15"
13"
HOLE FOR WITHDRAWING CORE
1⅝
7
8
9
10
11

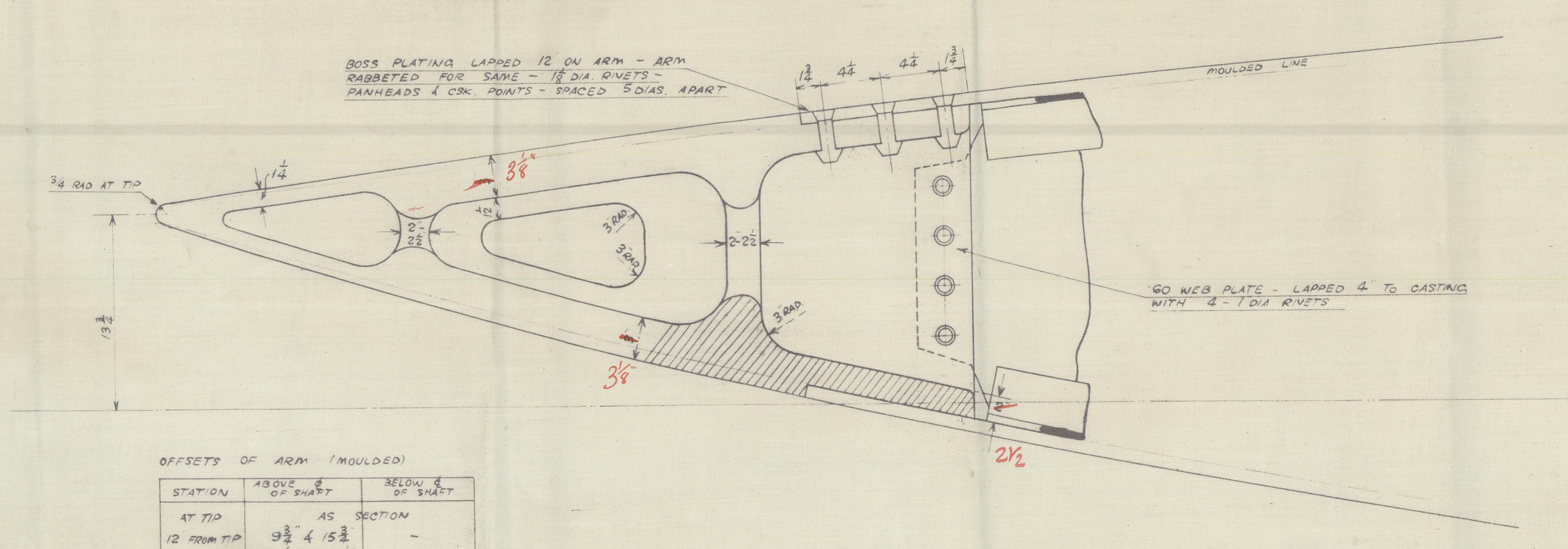
SECTION THROUGH "AA"


3'-0 RADIUS
3'-0 RADIUS
2'-3 RADIUS
HOLE FOR WITHDRAWING CORE
·90 FLOOR
ACCESS HOLE
HOLE
PLATE WEB
B
1⅝

PLAN VIEW


CENTRE OF PROPELLER - 12-0 FORWARD OF AFTER PERPENDICULAR
FRAME 7
FRAME 8
FRAME 9
FRAME 10
TAP RIVETS
6×6
·80 PLATE
4'-3" DIAM
2" MACHINING ALLOWANCE
2'-7½ DIA ROUGH BORE 2'-9½ DIA FINISHED
2'-7½ DIA ROUGH BORE 2'-10 DIA FINISHED
LENGTH OF BARREL - 4'-11 FINISHED MACHINED
1" MACHINING ALLOWANCE
4'-7·556" DIAM AT END OF BARREL
1⅛ DIA RIVETS - CSK HEADS & POINTS

SECTION THROUGH ARM AT "BB"

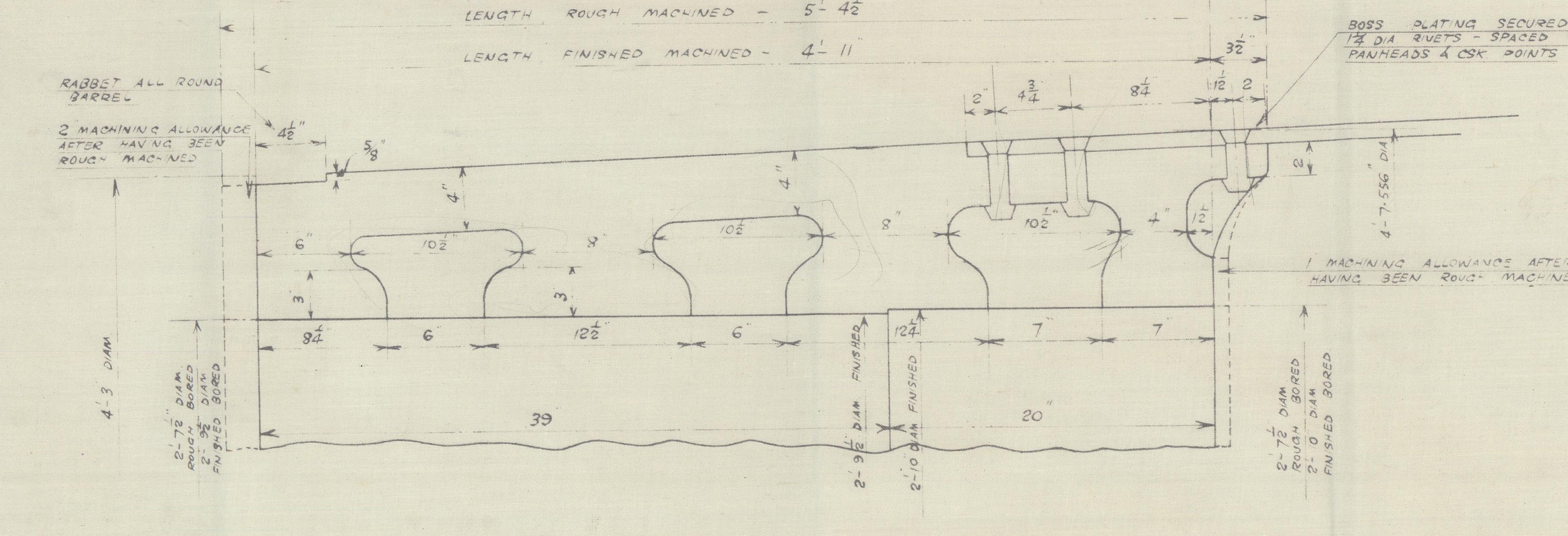

BOSS PLATING LAPPED 12 ON ARM - ARM RABBETED FOR SAME - 1⅛ DIA. RIVETS - PANHEADS & CSK. POINTS - SPACED 5 DIAS. APART
MOULDED LINE
¾ RAD AT TIP
3 RAD
2-2½
13¾
3⅛"
2½
60 WEB PLATE - LAPPED 4" TO CASTING WITH 4 - 1 DIA RIVETS

OFFSETS OF ARM (MOULDED)

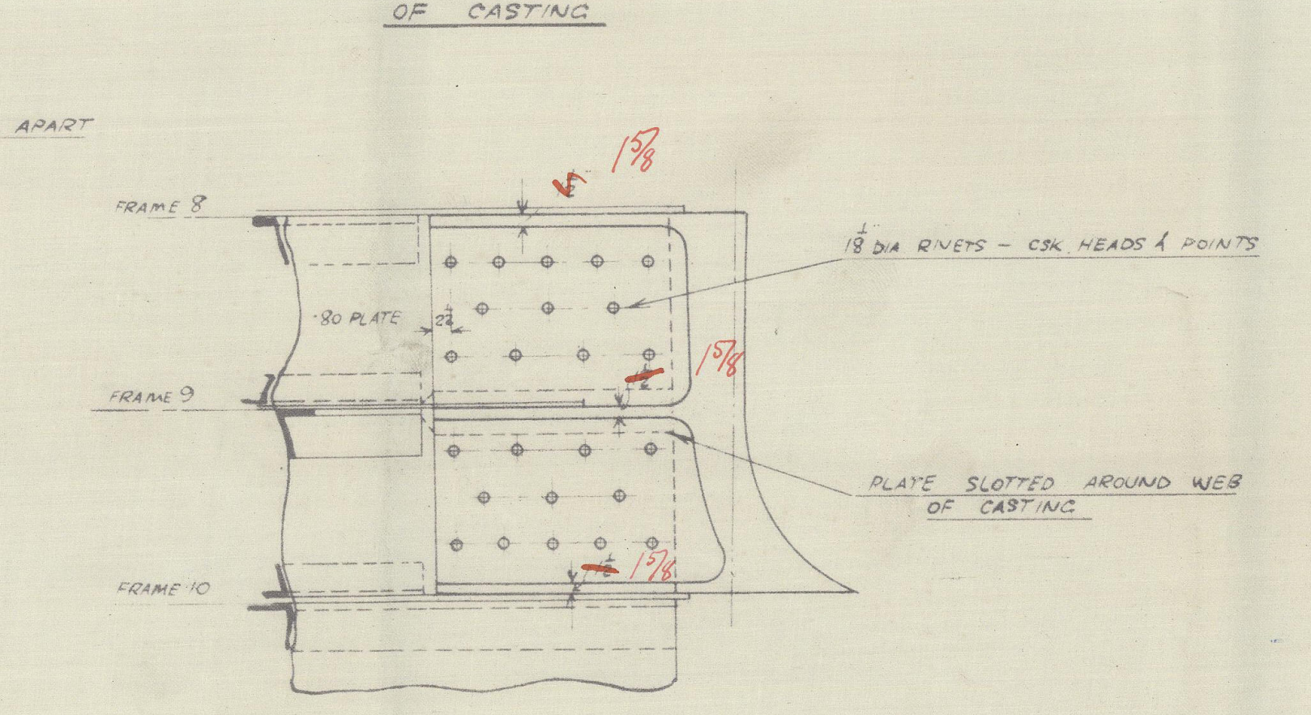
STATION	ABOVE ℄ OF SHAFT	BELOW ℄ OF SHAFT
AT TIP	AS SECTION	
12 FROM TIP	9¾" & 15¾	-
24 " "	6½ & 17¼	-
36 " "	3⅝ & 18⅝	-
48 " "	⅞ & 19⅞	-
60 " "	21⅛	1⅝
72 " "	22⅜	4

DETAIL OF BARREL

SCALE :- 1½ INCHES = 1 FOOT


LENGTH ROUGH MACHINED - 5'- 4½"
LENGTH FINISHED MACHINED - 4'- 11"
RABBET ALL ROUND BARREL
2 MACHINING ALLOWANCE AFTER HAVING BEEN ROUGH MACHINED
BOSS PLATING SECURED BY 1¼ DIA RIVETS - SPACED 5 DIAS. APART PANHEADS & CSK POINTS
1 MACHINING ALLOWANCE AFTER HAVING BEEN ROUGH MACHINED
4'-3 DIAM
4'-7·556" DIA
2'-7½" DIAM ROUGH BORED 2'-9½ DIAM FINISHED BORED
2'-9½ DIAM FINISHED
2'-10 DIAM FINISHED
2'-7½ DIAM ROUGH BORED 2'-10 DIAM FINISHED BORED
39
20"

PLAN VIEW OF UNDERSIDE
OF CASTING


FRAME 8
FRAME 9
FRAME 10
·80 PLATE
1⅛ DIA RIVETS - CSK. HEADS & POINTS
PLATE SLOTTED AROUND WEB OF CASTING
1⅝

PLAN Nº 49

WDA

28. 3. 30

003418-003420-0007

Vickers-Armstrongs Ld Nos 663/664

Stern frame and "Cut up"

No 663 - T.S.S. Strathnaver
Barrow Rpt No 2414

No 664 - T.S.S. Strathaird
Barrow Rpt No 2433

5

~~Duchess Box 148~~

003418-003420-0009

18/3/30

Nos 663 – 4.

STERN CASTINGS AND "CUT-UP."

SCALE 1/2 INCH = ONE FOOT.

MATERIAL OF CAST STEEL TO LLOYDS AND BOARD OF TRADE TESTS AND REQUIREMENTS

POSITION AND NUMBER OF TEST PIECES TO LLOYDS AND BOARD OF TRADE SURVEYORS SATISFACTION

NAVAL CONSTRUCTION WORKS
SHIPYARD DEPT.
VICKERS-ARMSTRONGS LTD.
14 MAR. 1930
BARROW-IN-FURNESS

HALF PLAN OF UPPER PORTION.
HOLES TO TAKE 7/8" RIVS. TO DECK
10" T.R. LAP 1¼" RIVS. SPACED 5 DIAS.
CENTRE WEB 1" THICK.
1½" WEB
C.L. OF SHIP.
45° 45 28¼" 6" 4"
attention to floor
SECTION AT X.Y.
C.L. OF RUDDER
DETAIL OF PINTLE.
SCALE ONE INCH = ONE FT.
THIS FACE MACHINED UP SQUARE TO C.L. OF RUDDER
12" DIA.
11" RAD.
5" RAD
9" RAD
CORED HOLE
6" DIA
18" DIA
5/8" GUNMETAL LINER SHRUNK ON PINTLE & PINNED BY 4 - 5/8" DIA. SLOT HEADED
SLIGHTLY ROUND AT CORNERS
19¼" DIA OVER LINER
H. DECK
CASTING RABBETED ALL ROUND TO HOUSE ·55 CONTOUR PLATE
SECTION AT K.
SECTION AT H.
DRAIN HOLES
HOLES TO TAKE 7/8" RIVS. TO FLOORS
FLOOR PLATES ·50
1" CENTRE WEB
SCARPH 1¼" RIVS
SECTION AT F.
HOLES TO TAKE 7/8" RIVS. THRO' CENTRE WEB.
SECTION AT D.
1½" CENTRE WEB
SECTION AT B.
1" WEB FOR SECURING FLOOR
W.T. BULKHEAD ON FR. 1.
SCARPH 2½" FLANGES
28¼" FINISHED BORE
48" FINISHED BORE
LIGHTENING HOLE 7" DIA.
SECTION THRO' C.L. OF RUDDER.
1" PLATE STRAP 1¼" RIVS. FITTED AT SCARPH.
SECTION AT SCARPH A.
ALL 1¼" RIVS. THRO' CASTING.
SCARPH A.
2½" FLANGES
·50 PLATE WEB
SECTION AT WEB. B.B.
HOLES TO TAKE 7/8" RIVS TO ·50 PLATE WEB.
CORED HOLE
SECTION THRO' PINTLE LOOKING AFT.
19'-0" ABOVE BASE
18" DIA PINTLE
3" CLEAR.
ROPE GUARD
HOLES TO TAKE 7/8" RIVS. TO FLOORS
10" T.R. LAP 1¼" RIVS. SPACED 5 DIAS.
ALL WEBS 1" THICK.
FLOOR PLATES ·50
1" CHECK IN CASTING TO HOUSE PLATE KEEL.
CASTING RABBETED ABOUT ·6"
SECTION AT FR 2.
SECTION AT FR 4.
SECTION AT FR 6.
9'-0" ABOVE BASE
OUTLINE OF RUDDER.
6¾" D.R. LAP 1⅛" RIVS SPACED 4½ - 1⅛ DIAS
·38 COFFIN PLATE
MOULDED LINE OF CUT-UP.
1" RIVS 5 DIAS
1½" WEB.
1" PLATE STRAP 1¼" RIVS.
SCARPH
SECTION ABT FR. No 1.
HOLES TO TAKE 7/8" DIA RIVS TO FLOORS.
CASTING RABBETED TO HOUSE GARBOARD STRAKE.
·50 FLOOR
BASE LINE
EXTENT OF CENTRE GIRDER
1" CHECK IN CASTING TO HOUSE PLATE KEEL
10" T.R. LAP 1¼" RIVS SPACED 5 DIAS
6¾" D.R. LAP 1⅛" RIVS. KEEL PLATE 1'·0
1" BELOW BASE LINE TO HOUSE PLATE KEEL
LINE OF SHELLING 50'-0" FROM FR. 0
FRAMES SPACED 33" APART
FRAMES SPACED 24"
FRAMES SPACED 33"
BEARING SURFACE ON UNDERSIDE
LINE AT BOTTOM OF CASTING
CASTING SWELLED OUT BELOW LOWER EDGE OF GARBOARD
1¼" RIVS. 5 DIAS.
C.L. OF SHIP
6" HALF SIDING
·50 FLOOR
HALF PLAN OF LOWER PORTION.
KEEL PLATE ·98
GARBOARD ·82
1¼" RIVS THRO' CASTING SPACED 5 DIAS
1¼" RIVS. THRO' CASTING
1⅛" RIVS.
KEEL PLATE 1'·0
GARBOARD ·69

Plans of Boss framing and Cruiser Stern to be submitted

Detail plan of Rudder to be submitted

PLAN No 28.

18.3.30

003418-003420-0009

Vickers-Armstrongs Ld No 663/664

Rudder. Plan.

No 663 - T.S.S. Strathnaver
Barrow Rpt No 2414

No 664 - T.S.S. Strathaird
Barrow Rpt No 2433

4

© 2020
Lloyd's Register
Foundation

003118-00420-0011

29.3.30

Nos 663 AND 4.

RUDDER PLAN.

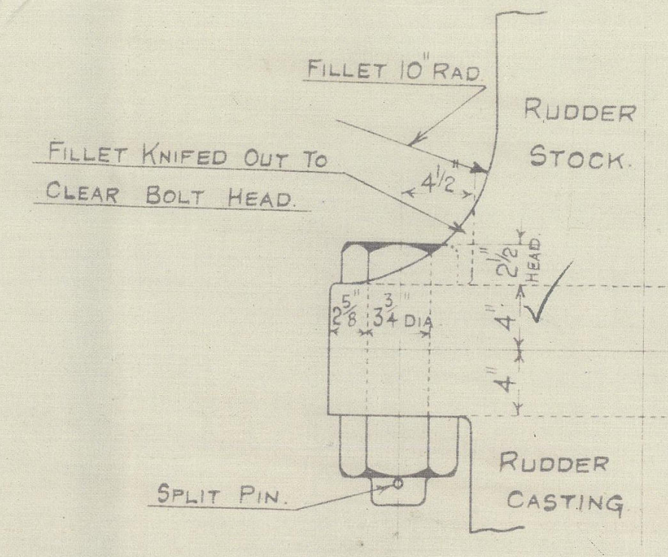
SCALE ½ INCH = ONE FOOT.

RUDDER CASTING OF STEEL TO LLOYDS AND BOARD OF TRADE TESTS AND REQUIREMENTS.
RUDDER STOCK OF FORGED STEEL TO LLOYDS AND BOARD OF TRADE TESTS AND REQUIREMENTS
AREA OF RUDDER 252 SQ. FT.
SEA SPEED = 20 KNOTS. ~~MAXIMUM TRIAL SPEED 22 KNOTS.~~

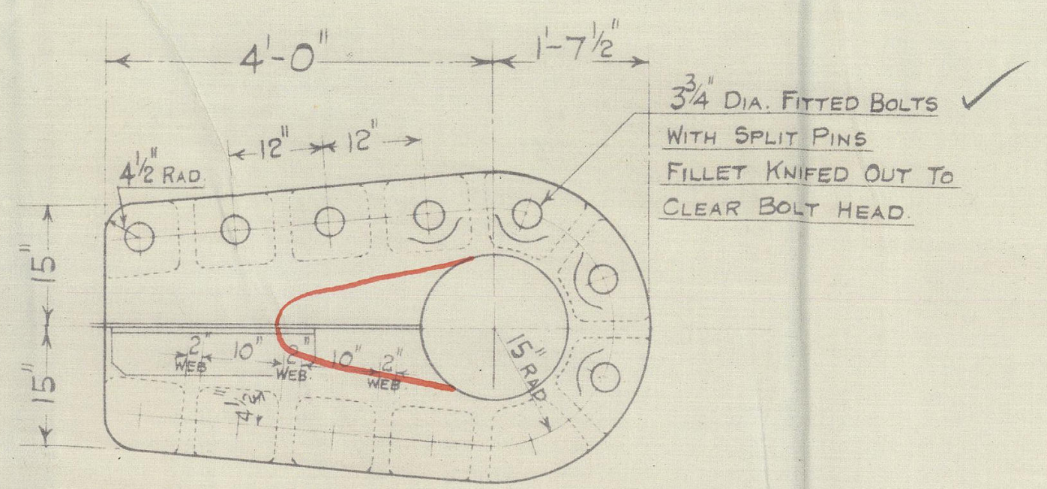
NOTES:-

1. POSITION AND NUMBER OF TEST PIECES TO LLOYDS AND BOARD OF TRADE SURVEYORS SATISFACTION.
2. INTERIOR OF LOWER PORTION OF RUDDER TO BE WELL COATED WITH BITUMEN, THE BOTTOM BEING FILLED IN SOLID.
3. TAPERED LINERS TO BE FITTED IN LOWER PORTION OF RUDDER WHERE THERE IS INSUFFICIENT ROOM TO PASS. RIVETS AND THROUGH RIVETS FITTED.

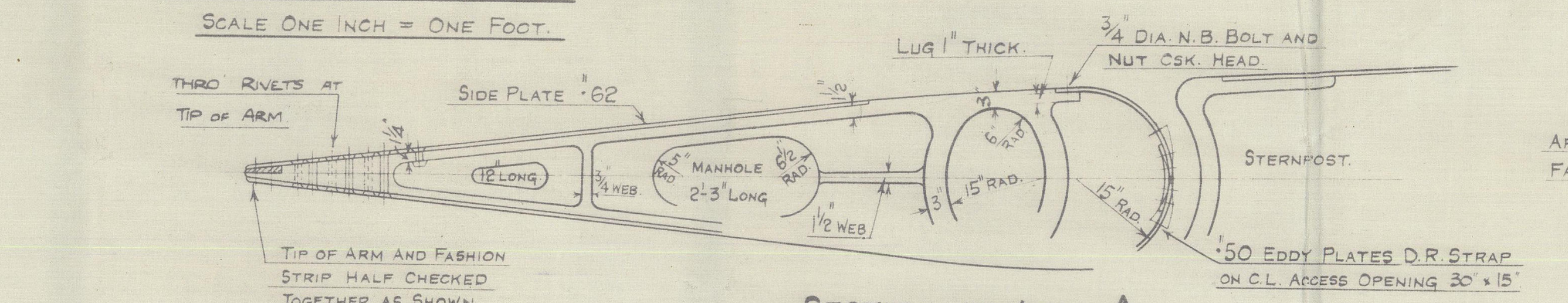
NAVAL CONSTRUCTION WORKS
SHIPYARD DEPT.
KERS - ARMSTRONGS LTD.
21 MAR. 1930
ROW-IN-


FILLET 10" RAD.
FILLET KNIFED OUT TO CLEAR BOLT HEAD.
RUDDER STOCK.
RUDDER CASTING.
SPLIT PIN.
4½
2½ HEAD
3¾ DIA

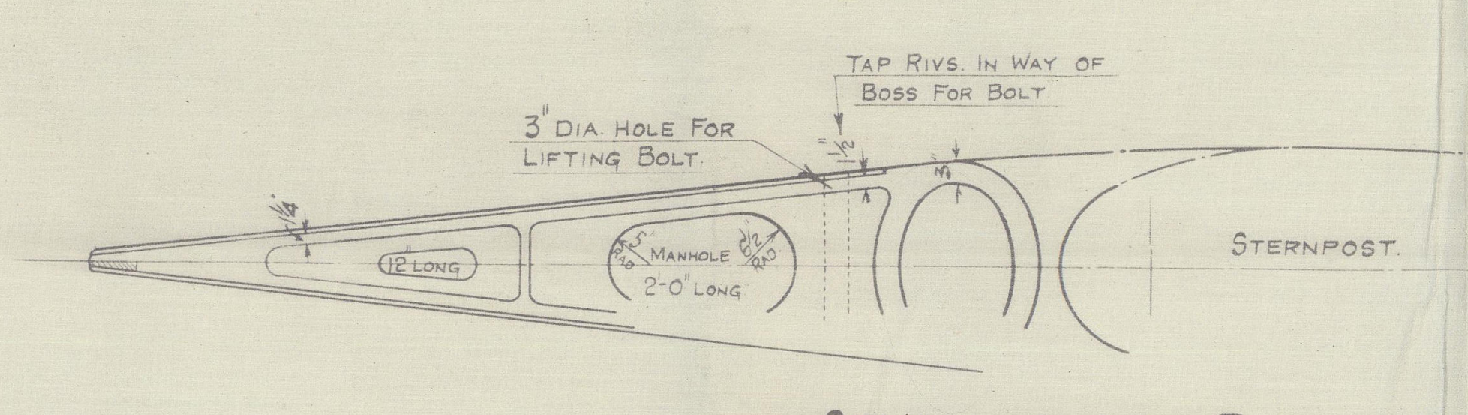
SECTION IN WAY OF BOLT.
SCALE ONE INCH = ONE FOOT.


4'-0"
1'-7½"
12"
4½" RAD.
15"
15" RAD.
2" WEB
10"
3¾" DIA. FITTED BOLTS ✓
WITH SPLIT PINS
FILLET KNIFED OUT TO CLEAR BOLT HEAD

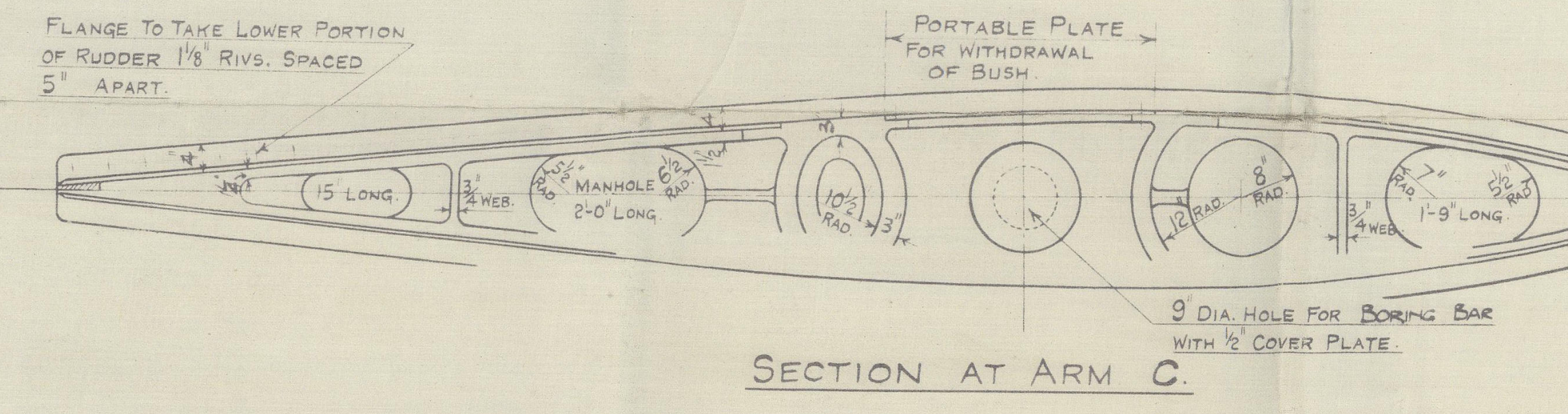
PLAN AT COUPLING


THRO' RIVETS AT TIP OF ARM
SIDE PLATE .62
LUG 1" THICK.
¾" DIA. N.B. BOLT AND NUT CSK. HEAD.
12" LONG
¾ WEB.
5" RAD
MANHOLE 2'-3" LONG
6½ RAD.
1½" WEB
15" RAD.
STERNPOST.
TIP OF ARM AND FASHION STRIP HALF CHECKED TOGETHER AS SHOWN.
.50 EDDY PLATES D.R. STRAP ON C.L. ACCESS OPENING 30" × 15"

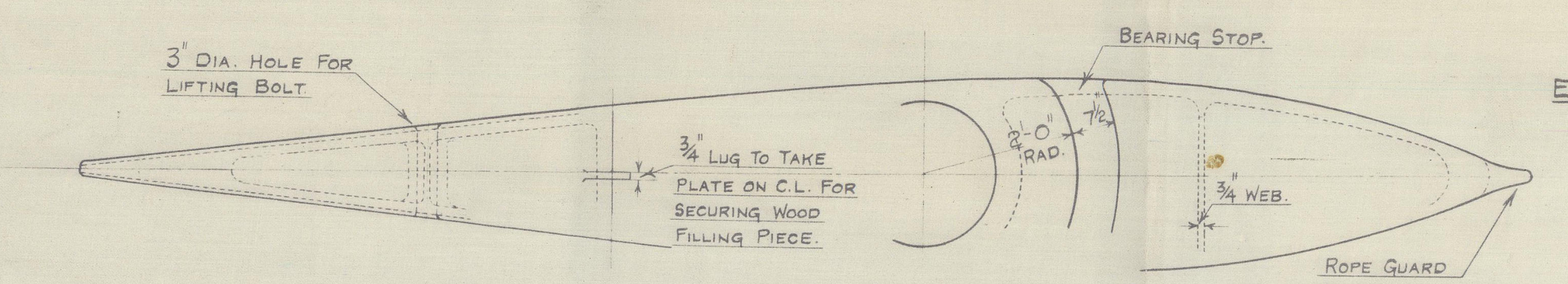
SECTION AT ARM A.


TAP RIVS. IN WAY OF BOSS FOR BOLT
3" DIA. HOLE FOR LIFTING BOLT.
12" LONG
MANHOLE 2'-0" LONG
STERNPOST.

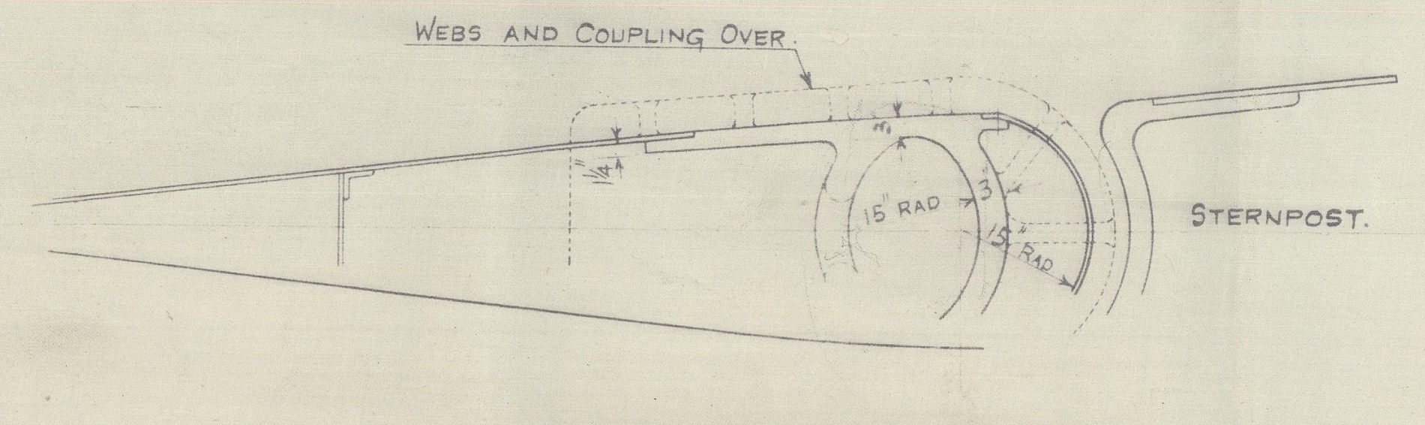
SECTION AT ARM B.


FLANGE TO TAKE LOWER PORTION OF RUDDER 1⅛" RIVS. SPACED 5" APART.
PORTABLE PLATE FOR WITHDRAWAL OF BUSH.
15 LONG
¾ WEB.
MANHOLE 2'-0" LONG
10½ RAD.
12 RAD.
8" RAD.
1'-9" LONG
9" DIA. HOLE FOR BORING BAR WITH ½" COVER PLATE.

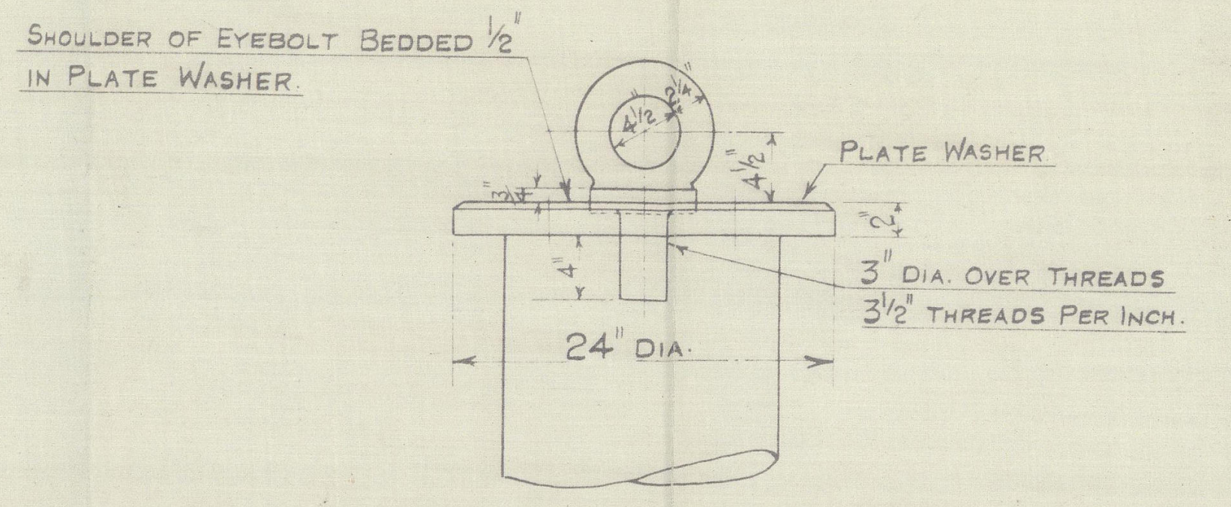
SECTION AT ARM C.


3" DIA. HOLE FOR LIFTING BOLT.
¾ LUG TO TAKE PLATE ON C.L. FOR SECURING WOOD FILLING PIECE.
BEARING STOP.
2'-0" RAD.
¾ WEB.
ROPE GUARD SEE DETAIL.

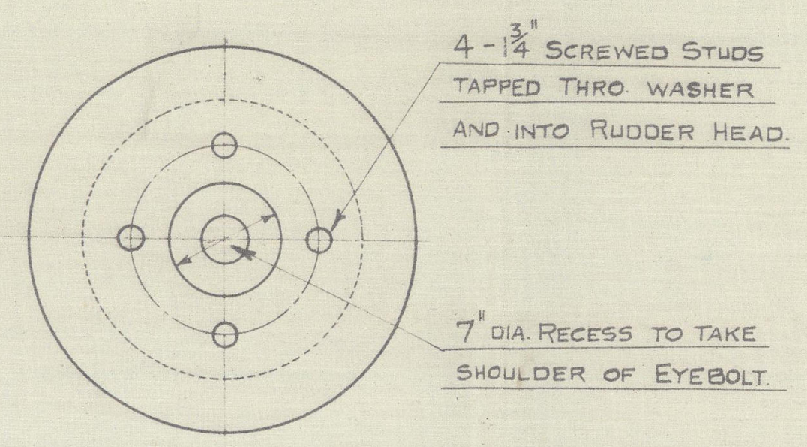
PLAN AT TOPS OF RUDDER


WEBS AND COUPLING OVER.
15" RAD
STERNPOST.

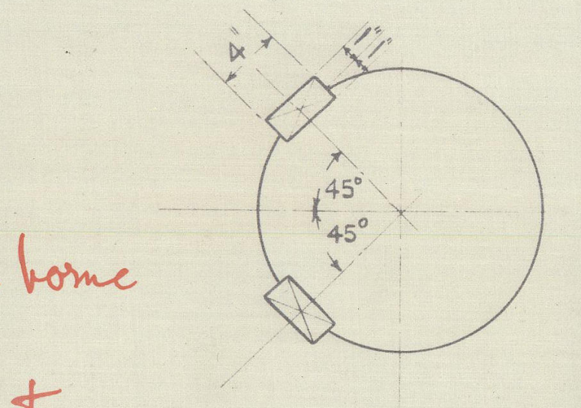
SECTION AT M.N.


SHOULDER OF EYEBOLT BEDDED ½" IN PLATE WASHER.
PLATE WASHER
3" DIA. OVER THREADS
3½" THREADS PER INCH.
24" DIA.

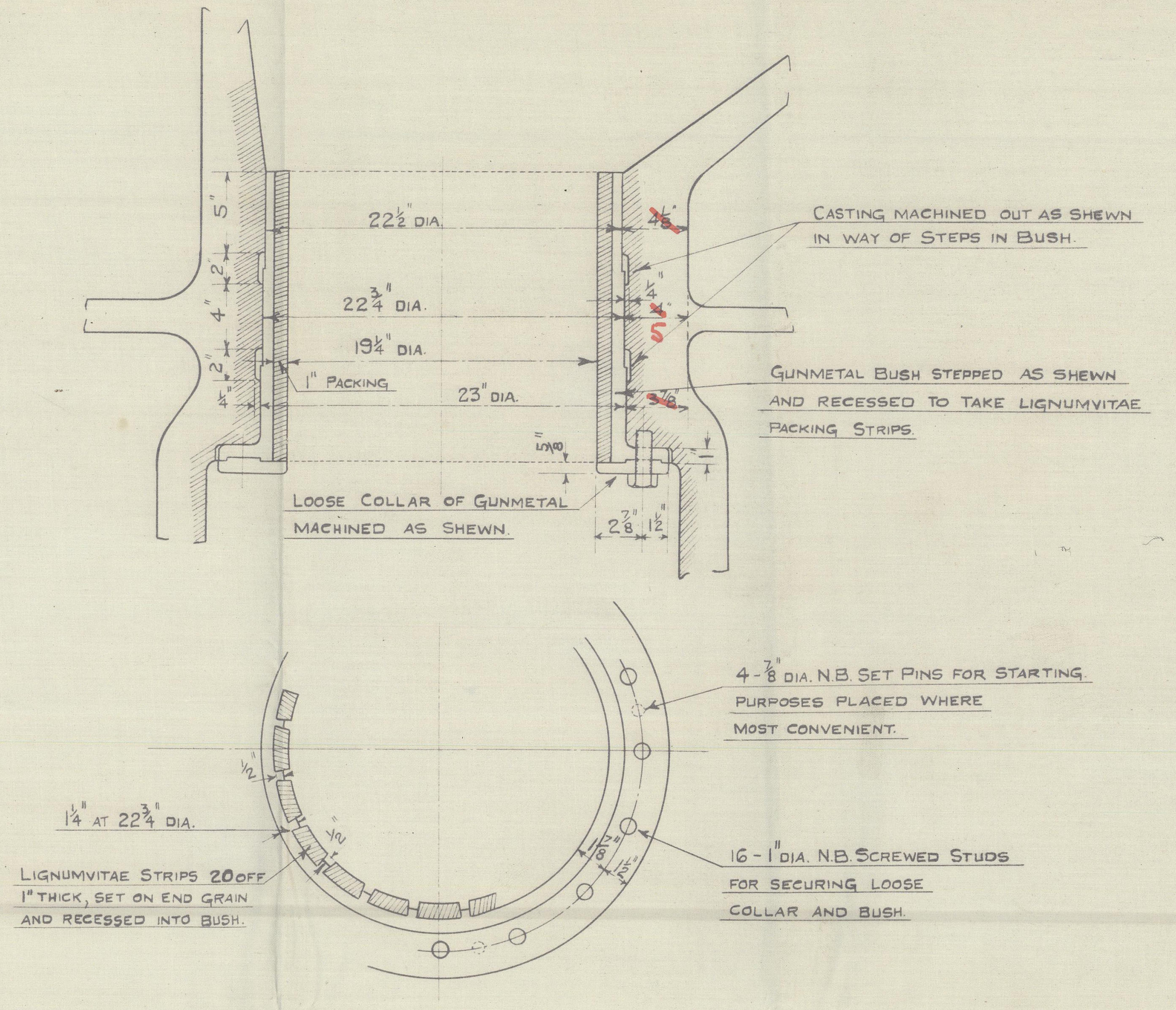
DETAIL OF LIFTING EYE AND PLATE.
SCALE ONE INCH = ONE FOOT.


4 - 1¾" SCREWED STUDS TAPPED THRO' WASHER AND INTO RUDDER HEAD.
7" DIA. RECESS TO TAKE SHOULDER OF EYEBOLT.

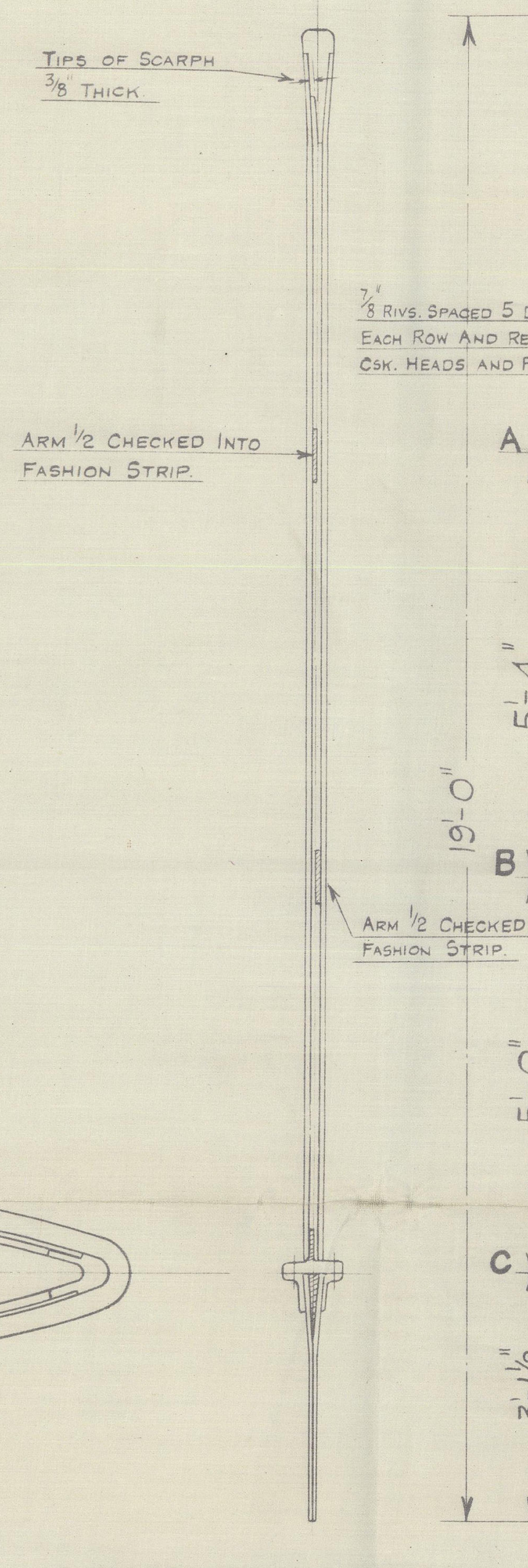
PLAN OF PLATE WASHER.
SCALE:- ONE INCH = ONE FOOT.



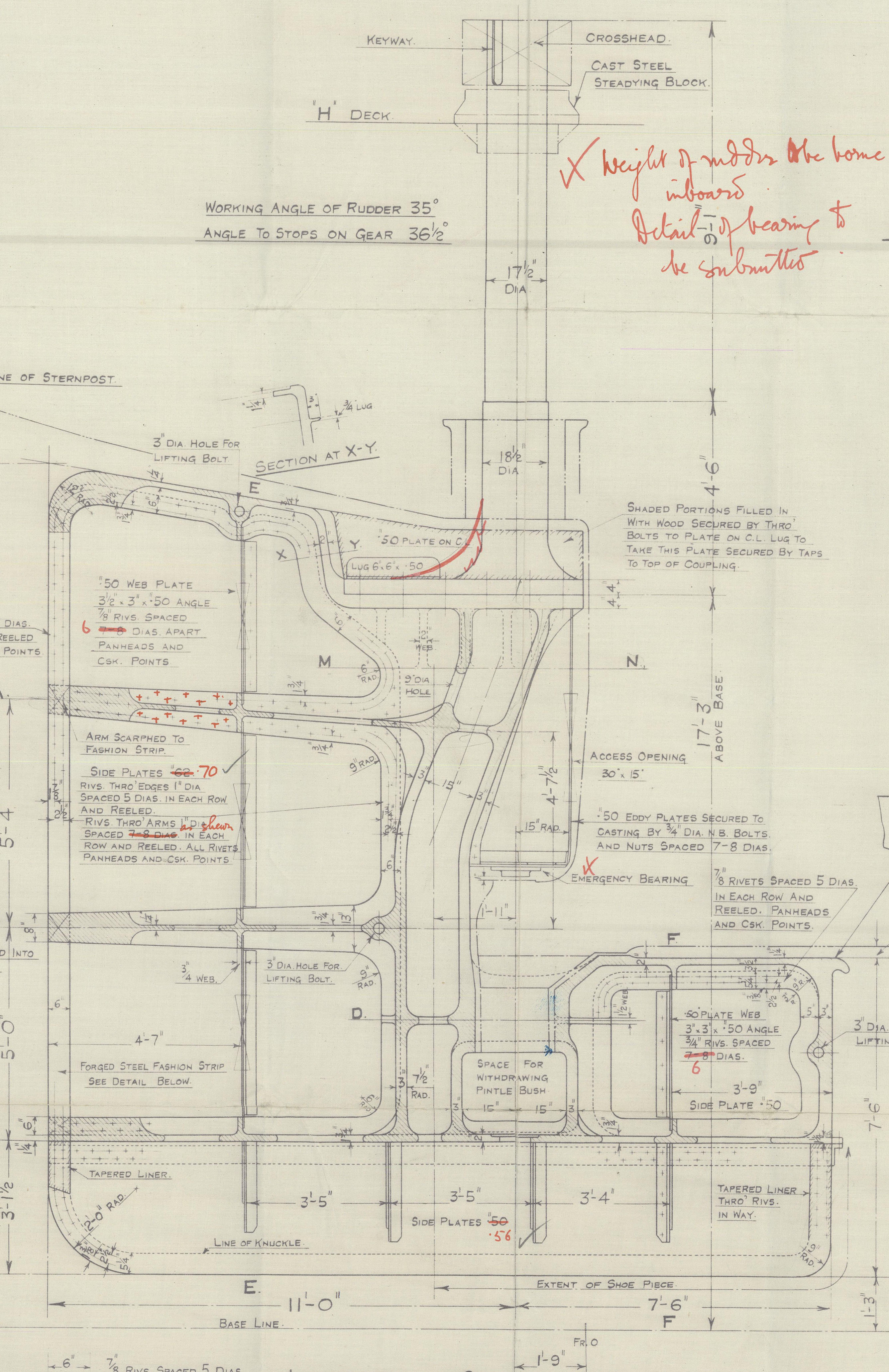
POSITION OF KEY IN RUDDER HEAD.
SCALE:- ONE INCH = ONE FOOT.


22½" DIA.
22¾" DIA.
19¼" DIA.
23" DIA.
1" PACKING
CASTING MACHINED OUT AS SHEWN IN WAY OF STEPS IN BUSH.
GUNMETAL BUSH STEPPED AS SHEWN AND RECESSED TO TAKE LIGNUMVITAE PACKING STRIPS.
LOOSE COLLAR OF GUNMETAL MACHINED AS SHEWN.
2⅞" 1½"
4 - ⅞" DIA. N.B. SET PINS FOR STARTING PURPOSES PLACED WHERE MOST CONVENIENT.
1¼" AT 22¾" DIA.
LIGNUMVITAE STRIPS 20 OFF 1" THICK, SET ON END GRAIN AND RECESSED INTO BUSH.
16 - 1" DIA. N.B. SCREWED STUDS FOR SECURING LOOSE COLLAR AND BUSH.

DETAIL OF BUSHING.
SCALE:- 1½ INCHES = ONE FOOT.

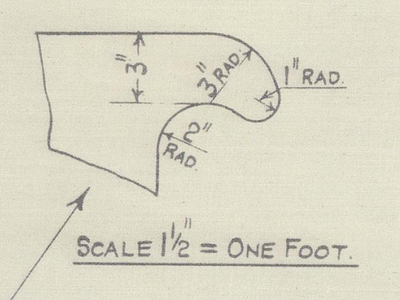

TIPS OF SCARPH ⅜" THICK.
ARM ½ CHECKED INTO FASHION STRIP.
ARM ½ CHECKED INTO FASHION STRIP.

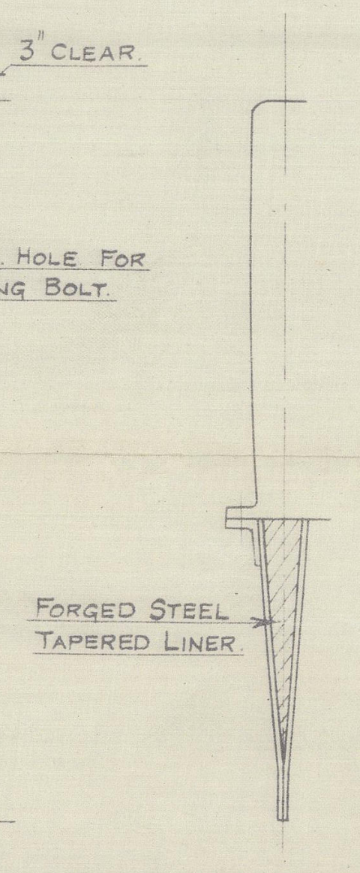
ELEVATION AT AFT END OF RUDDER.


KEYWAY.
CROSSHEAD.
CAST STEEL STEADYING BLOCK.
"H" DECK.
WORKING ANGLE OF RUDDER 35°
ANGLE TO STOPS ON GEAR 36½°
17½" DIA.
LINE OF STERNPOST.
3" DIA. HOLE FOR LIFTING BOLT.
SECTION AT X-Y.
¾" LUG
18½" DIA.
4'-6"
E
X
Y
.50 PLATE ON C.L.
LUG 6" × 6" × .50
SHADED PORTIONS FILLED IN WITH WOOD SECURED BY THRO' BOLTS TO PLATE ON C.L. LUG TO TAKE THIS PLATE SECURED BY TAPS TO TOP OF COUPLING.
7/8 RIVS. SPACED 5 DIAS. EACH ROW AND REELED CSK. HEADS AND POINTS.
.50 WEB PLATE
3½" × 3" × .50 ANGLE
⅞" RIVS. SPACED 6 ~~7-8~~ DIAS. APART
PANHEADS AND CSK. POINTS
M
N.
9" DIA. HOLE
17'-3" ABOVE BASE
A.
B.
C.
D.
ARM SCARPHED TO FASHION STRIP.
SIDE PLATES ~~.62~~ .70 ✓
RIVS. THRO' EDGES 1" DIA SPACED 5 DIAS. IN EACH ROW AND REELED.
RIVS. THRO' ARMS 1" DIA SPACED ~~7-8 DIAS.~~ as shewn IN EACH ROW AND REELED. ALL RIVETS PANHEADS AND CSK. POINTS
ACCESS OPENING 30" × 15"
4'-7½"
.50 EDDY PLATES SECURED TO CASTING BY ¾" DIA. N.B. BOLTS. AND NUTS SPACED 7-8 DIAS.
15" RAD.
X EMERGENCY BEARING
⅞" RIVETS SPACED 5 DIAS. IN EACH ROW AND REELED. PANHEADS AND CSK. POINTS.
1'-11"
19'-0"
5'-4"
5'-0"
3'-1½"
¾ WEB.
3" DIA. HOLE FOR LIFTING BOLT.
4'-7"
FORGED STEEL FASHION STRIP SEE DETAIL BELOW.
SPACE FOR WITHDRAWING PINTLE BUSH
15" 15"
F
.50 PLATE WEB
3" × 3" × .50 ANGLE
¾" RIVS. SPACED ~~7-8~~ 6 DIAS.
3'-9"
SIDE PLATE .50
3" DIA. HOLE FOR LIFTING BOLT.
TAPERED LINER.
2'-0" RAD.
3'-5"
3'-5"
3'-4"
SIDE PLATES ~~.50~~ .56 ✓
TAPERED LINER THRO' RIVS. IN WAY.
LINE OF KNUCKLE.
EXTENT OF SHOE PIECE
7'-6"
E.
11'-0"
7'-6"
F
BASE LINE.
FR. 0
1'-9"

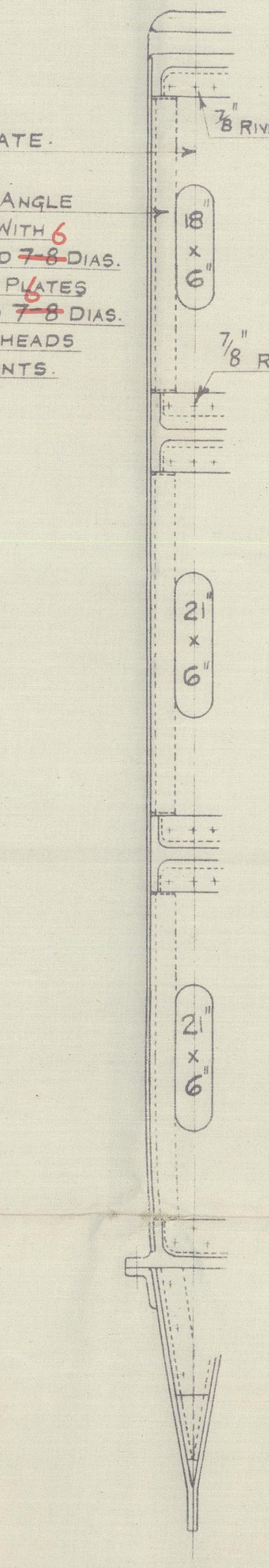
X Weight of rudder to be borne inboard. Detail of bearing to be submitted.

LONGITUDINAL SECTION ON C.L. OF RUDDER.

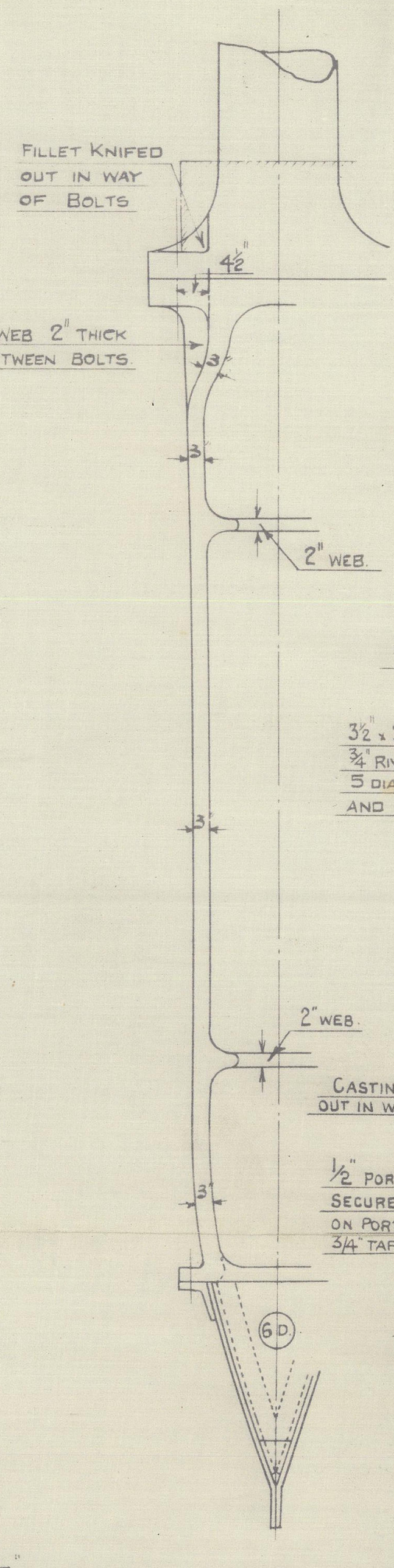

3"
3" RAD.
1" RAD.
2" RAD.
SCALE 1½" = ONE FOOT.


3" CLEAR.
7'-6"
1'-3"
FORGED STEEL TAPERED LINER.

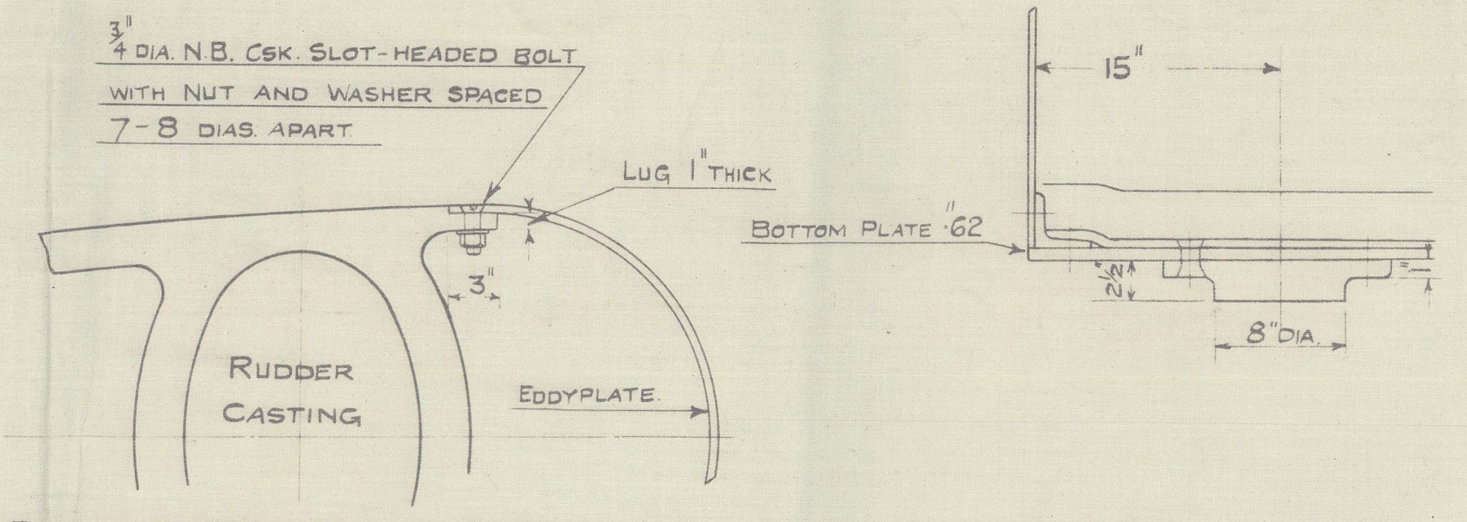
ELEVATION OF FORE END OF RUDDER.


.50 WEB PLATE.
3½" × 3" × .50 ANGLE
3" FL. TO WEB WITH 6
¾" RIVS. SPACED ~~7-8~~ DIAS.
3½" FL. TO SIDE PLATES
⅞" RIVS. SPACED ~~7-8~~ 6 DIAS.
ALL RIVS. PANHEADS AND CSK. POINTS.
⅞" RIVETS.
18 × 6
⅞" RIVS.
21 × 6
21 × 6

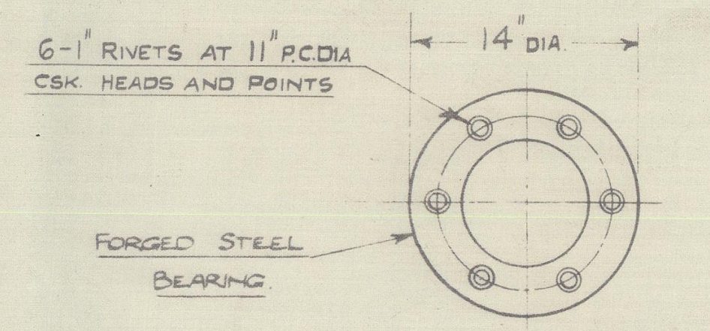
SECTION AT WEB E.


FILLET KNIFED OUT IN WAY OF BOLTS
4½"
WEB 2" THICK 'TWEEN BOLTS
2" WEB.
2" WEB.
6D.

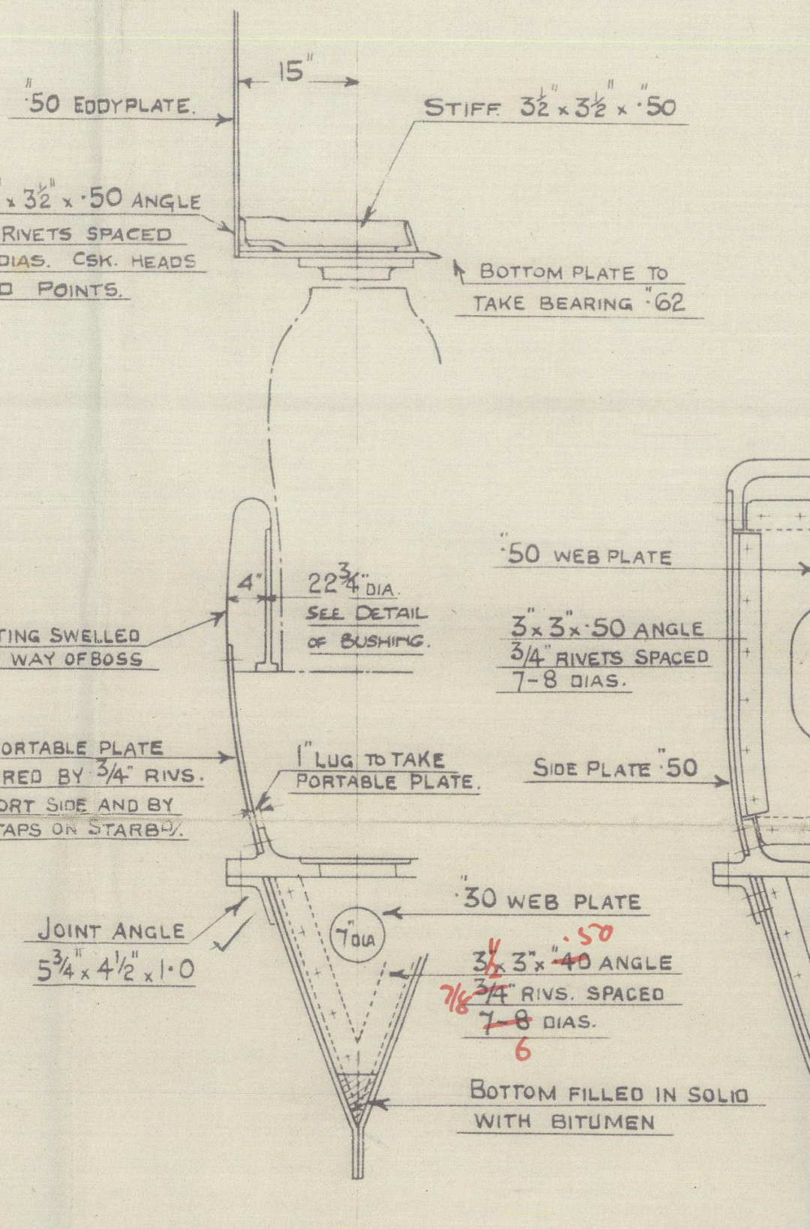
SECTION ON C.L. OF RUDDER.


¾" DIA. N.B. CSK. SLOT-HEADED BOLT WITH NUT AND WASHER SPACED 7-8 DIAS. APART.
LUG 1" THICK
RUDDER CASTING
EDDYPLATE.
15"
BOTTOM PLATE .62
8" DIA.

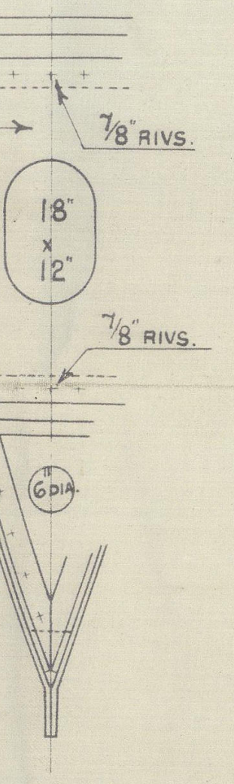
DETAIL OF EDDYPLATE TO CASTING
SCALE :- ONE INCH = ONE FOOT.


6 - 1" RIVETS AT 11" P.C. DIA CSK. HEADS AND POINTS
14" DIA.
FORGED STEEL BEARING.

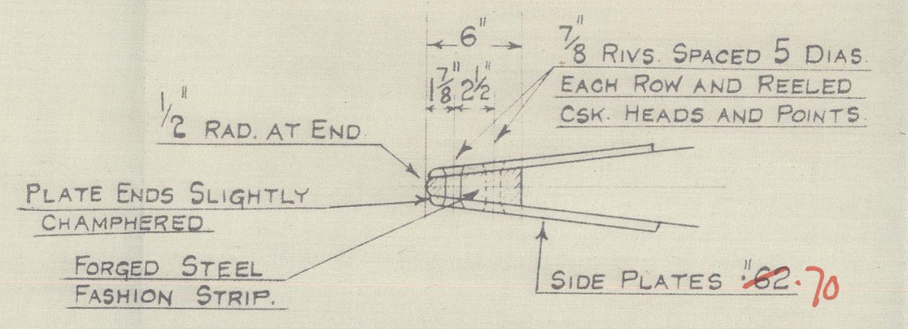
DETAIL OF EMERGENCY BEARING.
SCALE ONE INCH = ONE FOOT.


.50 EDDYPLATE.
15"
STIFF. 3½ × 3½ × .50
3½" × 3½" × .50 ANGLE ¾" RIVETS SPACED 5 DIAS. CSK. HEADS AND POINTS.
BOTTOM PLATE TO TAKE BEARING .62
4"
22¾" DIA. SEE DETAIL OF BUSHING.
CASTING SWELLED OUT IN WAY OF BOSS
½" PORTABLE PLATE SECURED BY ¾" RIVS. ON PORT SIDE AND BY ¾" TAPS ON STARBD.
1" LUG TO TAKE PORTABLE PLATE.
JOINT ANGLE 5¾" × 4½" × 1.0
7" DIA.
.30 WEB PLATE
~~3½~~ 4 3" × ~~.40~~ .50 ANGLE
⅞ ~~¾~~" RIVS. SPACED ~~7-8~~ 6 DIAS.
BOTTOM FILLED IN SOLID WITH BITUMEN

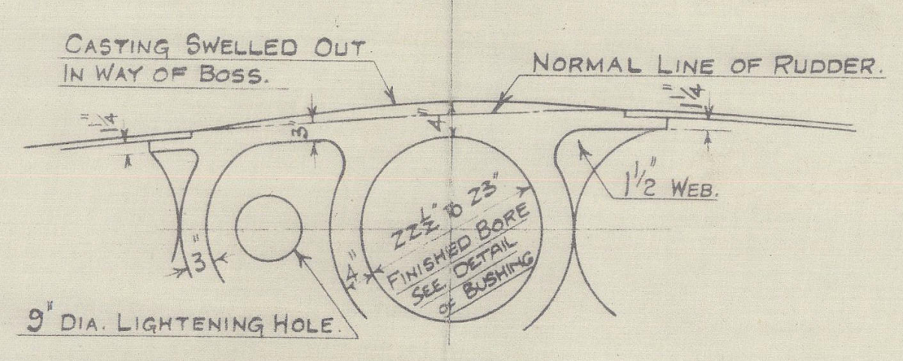
SECTION ON C.L. OF PINTLE.


.50 WEB PLATE
⅞" RIVS.
3" × 3" × .50 ANGLE ¾" RIVETS SPACED 7-8 DIAS.
18" × 12"
SIDE PLATE .50
⅞" RIVS.
6" DIA.

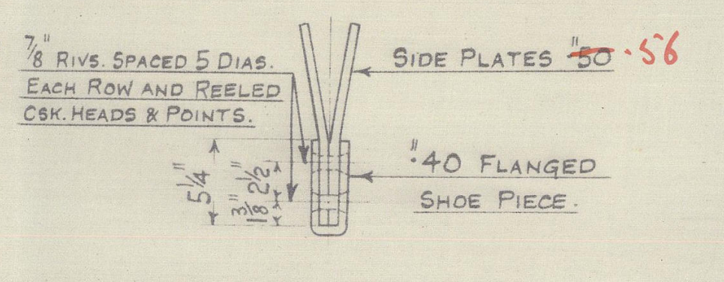
SECTION ON WEB F.


6"
1⅞" 2½"
⅞ RIVS. SPACED 5 DIAS. EACH ROW AND REELED CSK. HEADS AND POINTS
½" RAD. AT END
PLATE ENDS SLIGHTLY CHAMPHERED
FORGED STEEL FASHION STRIP.
SIDE PLATES ~~.62~~ .70

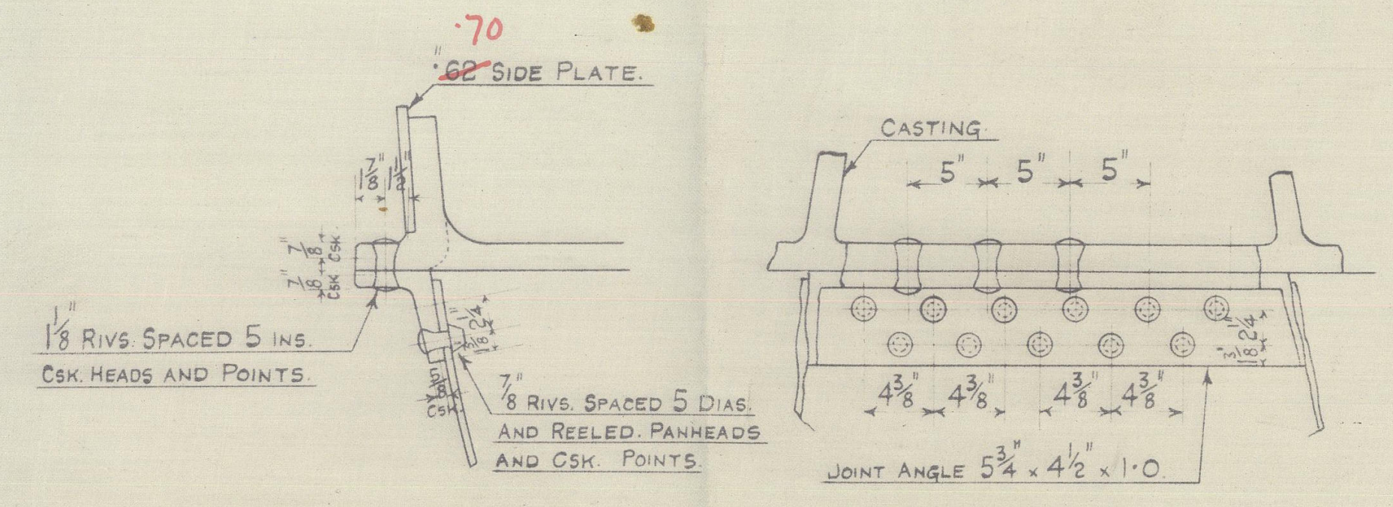
DETAIL OF FASHION STRIP.
SCALE ONE INCH = ONE FOOT.


CASTING SWELLED OUT IN WAY OF BOSS.
NORMAL LINE OF RUDDER.
22½" TO 23" FINISHED BORE SEE DETAIL OF BUSHING
1½" WEB.
9" DIA. LIGHTENING HOLE.

SECTION THRO' PINTLE AT D.


⅞" RIVS. SPACED 5 DIAS. EACH ROW AND REELED CSK. HEADS & POINTS.
SIDE PLATES ~~.50~~ .56
.40 FLANGED SHOE PIECE.
5¼"

SECTION THRO' SHOE PIECE.
SCALE ONE INCH = ONE FOOT.


~~.62~~ .70 SIDE PLATE.
1⅛" RIVS. SPACED 5 INS. CSK. HEADS AND POINTS.
⅞" RIVS. SPACED 5 DIAS. AND REELED. PANHEADS AND CSK. POINTS.
CASTING
5" 5" 5"
4⅜" 4⅜" 4⅜" 4⅜"
JOINT ANGLE 5¾" × 4½" × 1.0

DETAIL OF JOINT RIVETING.
SCALE ONE INCH = ONE FOOT.

PLAN No 30.

29. 3. 30.

0034K-003420-0011